A Study on Breast Cancer Awareness and Knowledge among Rural Female Population of Bangladesh

Submitted by

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ID: 2011-1-70-056

Department of Pharmacy

East West University

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A dissertation submitted to the Department of Pharmacy, East West University, in partial fulfillment of the requirements for the degree of Bachelor of Pharmacy.

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DECLARATION BY THE CANDIDATE

I, Nurunnahar Akter Nizum, hereby declare that this dissertation entitled **"A study on breast cancer awareness and knowledge among rural female population of Bangladesh"** submitted to the Department of Pharmacy, East West University, in the partial fulfillment of the requirement for the degree of Bachelor of Pharmacy (Honors) is a genuine & authentic research work carried out by me under the guidance of **Nigar Sultana Tithi**, Senior Lecturer, Department of Pharmacy. The contents of this dissertation, in full or in parts, have not been submitted to any other institute or University for the award of any degree or Diploma of Fellowship.

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Certificate by the Supervisor

This is to certify that the dissertation entitled "**A study on breast cancer awareness and knowledge among rural female population of Bangladesh"** submitted to the department of pharmacy, East West University was carried out by Nurunnahar Akter Nizum (ID: 2011-1-70-056) in partial fulfillment of the requirements of the degree of Bachelor of Pharmacy under our guidance. No part of this research has been submitted for any other degree.

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DEDICATION

This Research Paper Is Dedicated To My Mother

Shokhina Begum

ABSTRACT

Breast cancer in women is a foremost health problem both in developed and developing countries. Breast cancer is rising at a faster rate in Bangladesh. The study was conducted to find out their knowledge level about breast cancer, prevalence of risk factors and practice of Breast Self Exam among the study population. The study location was three districts (Noakhali, Comilla and Gazipur) of Bangladesh. Data was collected from (n=350) female persons by a self-administered questionnaire. Majority of them were graduates (34.57 %). Breast cancer was known to 73.14% women (n=350) and 52.01% of them mentioned electronic media as the source of information. Majority (62%) of them had correct knowledge about treatment but only few (22%) knew the diagnosis options. Knowledge about sign and symptoms was very poor among the women. Small portion of them mentioned about risk factors. The study revealed that majority of them are in lower risk condition in terms of normal BMI status (60.29%), proper breast feeding practice (99.43%), lower level of family history and others. Respondents having breast cancer history in family had correct knowledge about it. Results showed that 57.14% heard about breast self exam but only 2.70% women was correctly performing breast self-exam and only 6.49% women had correct knowledge about mammography. Most of the respondents had incomplete or wrong information about breast cancer. The present situation can become more devastating if early attention is not given. So, steps should be taken by policy makers and health professionals to educate the general female population about breast cancer.

Key words: Breast Cancer, Rural women, Breast-self Exam, Mammography, Sign and Symptoms, Risk factors, BMI status, Treatment.

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List of Abbreviation

Abbreviation	**Elaboration**
BSE	Breast Self-examination
CBE	Clinical Breast Examination
IBC	Inflammatory Breast Cancer
DCIS	Ductal Carcinoma in Situ
LCIS	Lobular Carcinoma in Situ
IDC	Infiltrating Ductal Carcinoma
ILC	Infiltrating Lobular Carcinoma
HRT	Hormonal Replacement Therapy
PHT	Combined post-menopausal hormone therapy
DES	Diethylstilbestrol exposure
FNA	Fine Needle Aspiration
EDD	Expected Date of Delivery
WHO	World Health Organization
BMI	Body Mass Index

Chapter 1

INTRODUCTION

1.1 Cell

Our body is made up of millions of tiny cells and different parts of the body such as organs, bones, muscles, skin and blood are made up from different specialized cells. Nucleus is the centre of most of cells which contains thousands of genes made up from a chemical called DNA. These genes control the functions of the cell. From time to time most types of cell divide and multiply in the body. Old cells are replaced by new cells as old cells become damaged. A normal cell may become abnormal when one or more gene in the cell becomes damaged or altered. Then from the original cells lots of abnormal cells develop to form a group of abnormal cells leading to the formation of tumor. Sometimes tumor may lead to the formation of cancer (Kirkegaard et al., 2010).

1.2 Cancer

The word cancer is derived from the Latin word for crab because cancers are often very irregularly shaped, and because, like a crab, they "grab on and don't let go". Cancer is a term used for diseases in which abnormal cells divide without control and are able to invade other tissues. Cancer cells can spread to other parts of the body through the blood and lymph systems. The process of cancer spreading is called ‘metastasis’. Growth of cancer cell is different from normal cells. Cancer cells continue to grow and form new abnormal cells instead of dying. Due to the damage of DNA normal cells become cancer cells. DNA is present in every cell and conducts their functions. Normally when DNA is damaged in normal cells they rapidly repair the damage or die but in cancer cells the damaged DNA is not repaired or dies. It produces new cells containing the damage which is not necessary for the body. Thus cancer develops inside the body (Sim, Seah and Tan, 2015).

Cancer types can be grouped into broader categories. The main categories of cancer include:

- **Carcinoma** - cancer that begins in the skin or in tissues that line or cover internal organs. There are a number of subtypes of carcinoma, including adenocarcinoma, basal cell carcinoma, squamous cell carcinoma, and transitional cell carcinoma.
- **Sarcoma** - cancer that begins in bone, cartilage, fat, muscle, blood vessels, or other connective or supportive tissue.

- **Leukemia** - cancer that starts in blood-forming tissue such as the bone marrow and causes large numbers of abnormal blood cells to be produced and enter the blood.
- **Lymphoma and myeloma** - cancers that begin in the cells of the immune system.
- **Central nervous system cancers** - cancers that begin in the tissues of the brain and spinal cord (Chantal and Stephen, 2009).

1.3 Breast cancer

Breast cancer is a kind of cancer that develops from breast cells. Breast cancer usually starts off in the inner lining of milk ducts or the lobules that supply them with milk. A malignant tumor can spread to other parts of the body. Someone with breast cancer may have cancer cells in just one part of the breast, which might be felt as a lump. The cancer can spread throughout one or both breasts. Sometimes breast cancer spreads to other parts of the body, like the bones, the liver, or elsewhere (Moya *et al*, 2004).

Tumors in the breast can be benign (not cancer) or malignant (cancer):

Benign tumors: Not harmful to body

- Infrequently assault the tissues surrounding them
- Don't extend to other parts of the body
- Can be removed easily and normally don't grow back

Malignant tumors: May be life threatening

- Easily invade surrounding organs and tissues
- Spread to other parts of the body like bones or liver
- Hardly can be removed but grow back quickly (Peacey et al., 2006).

1.4 The anatomy of a female breast

A mature human female's breast consists of fat, connective tissue and thousands of lobules - tiny glands which produce milk. The milk of a breastfeeding mother goes through tiny ducts (tubes) and is delivered through the nipple.

The breast, like any other part of the body, consists of billions of microscopic cells. These cells multiply in an orderly fashion - new cells are made to replace the ones that died. In cancer, the cells multiply uncontrollably, and there are too many cells, progressively more and more than there should be. Cancer that begins in the lactiferous duct (milk duct),

known as ductal carcinoma, is the most common type. Cancer that begins in the lobules, known as lobular carcinoma, is much less common (Moya *et al*, 2004).

1.5 The Lymph System of the Breast

The lymph system, which is part of the immune system, is a network of lymph vessels and lymph nodes running throughout the entire body. Similar to how the blood circulatory system distributes elements throughout the body, the lymph system transports disease-fighting cells and fluids. Clusters of bean-shaped lymph nodes are fixed in areas throughout the lymph system and act as filters by carrying abnormal cells away from healthy tissue. The type of breast cancer is generally determined by the origin of the growth of cancer cells, which is almost always in the lobes, lobules, or ducts. When cancer is found in the nearby lymph nodes, it helps doctors identify just how far the cancer has spread. If the nearest nodes contain cancer, additional nodes are usually examined for the presence or absence of cancer cells to understand how far the disease has progressed. If the cancer cells have spread to lymph nodes, there is a higher chance that the cells could have also gotten into the bloodstream and spread (metastasized) to other sites in the body. The more lymph nodes with breast cancer cells, the more likely it is that the cancer may be found in other organs as well. Because of this, finding cancer in one or more lymph nodes often affects the treatment plan. Still, not all women with cancer cells in their lymph nodes develop metastases, and some women can have no cancer cells in their lymph nodes and later develop metastasis (Georgia *et al,* 2008).

1.6 Signs and symptoms of breast cancer

The most common symptom of breast cancer is a new lump or mass. A painless, hard mass that has irregular edges is more likely to be cancerous, but breast cancers can be tender, soft, or rounded. They can even be painful. For this reason, it is important to have any new breast mass or lump or breast change checked by a health care professional experienced in diagnosing breast diseases (Georgia *et al,* 2008)

Signs and symptoms of breast cancer include:

- Early signs and symptoms
- Late signs and symptoms

1.6.1 Early signs and symptoms

- **Lump in the breast** – the most common first sign

    - The woman usually finds the lump.
        - Sometimes the lump is seen on a screening mammogram before it can be felt.
    - The lump is present all the time and does not get smaller or go away with the menstrual cycle.
    - The lump may feel like it is attached to the skin or chest wall and cannot be moved.
    - The lump may feel hard, irregular in shape and very different from the rest of the breast tissue.
    - The lump may be tender, but it is usually not painful.
        - Pain is more often a symptom of a non-cancerous (benign) condition, but should be checked by a doctor. (Barlow et al., 2002)

- **Lump in the armpit (axilla)**

    - Sometimes small, hard lumps in the armpit may be a sign that breast cancer has spread to the lymph nodes. Although these lumps are often painless, they may be tender. (Barlow et al., 2002)

- **Changes in breast shape or size** (Barlow et al., 2002)
- **Skin changes**

    - The skin of the breast may become dimpled or puckered. A thickening and dimpling of the skin is sometimes called orange peel skin.
    - Redness, swelling and increased warmth (signs that look like an infection) may be a sign of inflammatory breast cancer.
    - Itching of the breast or nipple may be a sign of inflammatory breast cancer.
        - Itchiness is often not relieved by ointments, creams or other medications (Barlow et al., 2002).

- **Nipple changes**

    - Some people's nipples are always pointed inward (inverted). Normal nipples that suddenly become inverted should be checked by a doctor.
    - Discharge from the nipples can be caused by many conditions, most of which are non-cancerous (benign).
        - Discharge from one nipple may be a sign of breast cancer, especially if it appears without squeezing the nipple (is spontaneous) and is blood-stained.
    - Crusting, ulcers or scaling on the nipple may be a sign of some rare types of breast cancer, such as Paget disease of the nipple (Barlow et al., 2002).

1.6.2 Late signs and symptoms

Late signs and symptoms occur as the cancer grows larger or spreads to other parts of the body, including other organs.

- Bone pain, jaundice
- Nausea
- Loss of appetite
- Headache, muscle weakness
- Buildup of fluid around the lungs (pleural effusion) shortness of breath, cough
- Double vision (Barlow et al., 2002).

1.7 Type of breast cancer

Breast cancer can begin in different areas of the breast — the ducts, the lobules, or in some cases, the tissue in between. There are different types of breast cancer, including non-invasive, invasive, recurrent, and metastatic breast cancers (Agarwal et al., 2007).

1.7.1 Ductal Carcinoma In-Situ (DCIS)

The term "in situ" or "in place" refers to a very early form of cancer that has not spread. DCIS is a type of pre-cancer inside of the ductal system that has not attacked the nearby tissue. Currently, there is no way to determine if this type of breast cancer will go on to become invasive. This is a very common type of non invasive cancer with 1 in 5 diagnosed as DCIS. Nearly all patients diagnosed with this type of pre-cancer can be cured (Agarwal et al., 2007).

1.7.2 Lobular Carcinoma in Situ (LCIS)

This is a very rare non-invasive tumor that most doctors believe will not develop into invasive cancer. LCIS is more of a "marker" or signal that breast cancer may develop. Described as an abnormal growth in the number of cells, LCIS has recently been renamed lobular neoplasia. Women who have these "markers" are at greater risk of developing breast cancer later in life (Agarwal et al., 2007).

1.7.3 Infiltrating Ductal Carcinoma (IDC)

IDC is the most common type of breast cancer. It starts in the milk ducts of breast and spreads to surrounding tissues. IDC could spread through the lymph system or bloodstream to other parts of body. Approximately 8 out of 10 invasive breast cancers are IDC (Agarwal et al., 2007).

1.7.4 Medullary Carcinoma

Medullary carcinoma accounts for 15% of all breast cancer types. It most frequently occurs in women in their late 40s and 50s, presenting with cells that resemble the medulla (gray matter) of the brain (Agarwal et al., 2007).

1.7.5 Infiltrating Lobular Carcinoma (ILC)

ILC is the second most common type of breast cancer after infiltrating ductual carcinoma. It usually appears as a subtle thickening in the upper-outer section of the breast. ILC starts in the lobules or lobes and has a greater chance of spreading to other parts of the body. Usually positive for estrogen and progesterone receptors, these tumors respond well to hormone therapy. About 1 out of 10 invasive breast cancers is ILC (Agarwal et al., 2007).

1.7.6 Tubular Carcinoma

Tubular carcinoma cells have a distinctive tubular structure when viewed under a microscope. This type of breast cancer is typically found in women aged 50 and above. It has an excellent 10-year survival rate of 95% (Agarwal et al., 2007).

1.7.7 Mucinous Carcinoma (Colloid)

Mucinous (colloid) carcinoma is a rare type of invasive breast cancer that rarely spreads to lymph nodes. It is formed when cancer cells inside breast produce mucous. This

mucous contains cancer cells that are very distinct from normal cells under a microscope. The mucous and cancer cells combine to form jelly-like tumors (Agarwal et al., 2007).

1.7.8 Paget's Disease

Paget's disease of the breast is an eczema-like change in the skin of the nipple. The nipple becomes itchy and scaly and does not get better. Studies have shown that 9 out of 10 women who experience these symptoms have an underlying breast cancer. Paget's disease can occur at any age but will more likely occur in women who are in their 50s (Agarwal et al., 2007).

1.7.9 Inflammatory Breast Cancer (IBC)

Inflammatory breast cancer is a rare and very aggressive type of cancer that accounts for 1-3% of all breast cancers. It causes the lymph vessels in the skin of the breast to become blocked. IBC usually grows in nests or sheets, rather than as a confined, solid tumor or palpable mass. This type of breast cancer is called "inflammatory" because the breast often looks swollen and red, or "inflamed". It is often mistaken for an infection called "mastitis" and treated with antibiotics. If the patient shows no signs of improvement, further testing will be required to determine if cancer is present (Agarwal et al., 2007).

1.7.10 Rare Breast Cancer

Although most breast cancers are carcinomas - tumors that develop from epithelial (surface or lining) tissues - a very small number of breast cancers may arise from the muscle, fat, or connective tissues of the breast. Such cancers are known as sarcomas. The rare types of sarcoma that occasionally are diagnosed within the breast include:

- **Angiosarcoma** : also known as hemangiosarcoma; a cancer that is composed of cavity-lining and fiber-producing cells (Sally, Elizabeth and Gilchrist, 2002).
- **Cystosarcoma phylloides**: cancer that primarily affects middle-aged women who have histories of recurring fibroadenomas (Sally, Elizabeth and Gilchrist, 2002).

1.8 Stages of breast cancer

Stages are the process physician use to assess the size and location of a patient's cancer. This information is required for the determining the optimal form of treatment. Breast cancer is divided into 0 to stage IV according to the size and nature of spread (Metastasis),

Stage 0: (Carcinoma in Situ) Carcinoma in situ is very early breast cancer. In this stage cancer has not invaded into the normal breast tissue and is contained in either the breast duct (ductal carcinoma in situ) or the breast lobule (lobular carcinoma in situ). By definition, this type of cancer is not invasive and is not able to travel to the lymph nodes or other parts of the body.

Stage 1: In this stage the tumor size is not more than 2 cm in diameter and has not spread to distant parts of the body.

Stage II: In this stage the tumor is larger than the stage I that means 2-5 cm in diameter. Like stage I it indicates that it has not spread to distant parts of the body but it may or may not be spread to axillary lymph nodes.

Stage II (a) Tumor size is >5 cm in diameter but has not spread to axillary lymph nodes

Stage II (b) Tumor size is <2cm in diameter but has spread to less than 4 axillary lymph nodes.

Stage III (Locally advance cancer): in this stage cancer spread to axillary lymph nodes.

Stage III (a) Tumor size is >5cm and spread to axillary lymph nodes.

Stage III (b) tumor size is <2cm in diameter but the cancer has spread to axillary lymph nodes above the coller bones.

Stage IV: Tumor spread distant parts of the body like bones, liver and kidney (Gore, DeGregori and Porter, 2013).

1.9 Breast cancer risk factors

1.9.1 General

- **Aging:** On average, women over 60 are more likely to be diagnosed with breast cancer. Only about 10 – 15 percent of breast cancers occur in women younger than 45. However, this may vary for different races or ethnicities (Gore, DeGregori and Porter, 2013).

Table 1.1: Advancing age is a risk factor for Breast cancer (Peacey et al., 2006).

A Woman's Chances of Breast Cancer Increases With Age	
From age 30 to age 39	0.44% (1 in 227)
From age 40 to age 49	1.49% (1 in 67)
From age 50 to age 59	2.79% (1 in 36)
From age 60 to age 70	3.38% (1 in 26)

- **Gender:** Although nearly 2,000 men will be diagnosed with breast cancer each year, breast cancer is 100 times more common in women. The National Cancer Institute estimates that over 190,000 women will be diagnosed with breast cancer annually. (Gore, DeGregori and Porter, 2013)

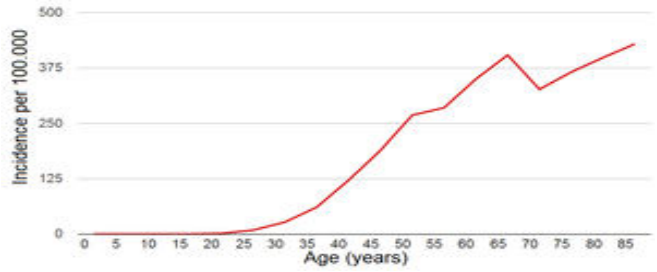

Figure: 1.1 Breast cancer incidences among women by age in the UK (2006-2008) (Peacey et al., 2006).

1.9.2 Genetics

- **Family history:** Having a family history of breast cancer, particularly women with a mother, sister or daughter who has or had breast cancer, may double the risk (Cuzick, J. 2010).
- **Inherited factors:** Some inherited genetic mutations may increase your breast cancer risks. Mutations in the BRCA1 and BRCA2 genes are the most common inherited causes. Other rare mutations may also make some women more susceptible to developing breast cancer. Gene testing reveals the presence of potential genetic problems, particularly in families that have a history of breast cancer (Cuzick, J. 2010).

1.3 Body

- **Obesity:** After menopause, fat tissue may contribute to increases in estrogen levels, and high levels of estrogen may increase the risk of breast cancer. Weight gain during adulthood and excess body fat around the waist may also play a role (Cuzick, J. 2010).
- **Not having children:** Women who have had no children, or who were pregnant later in life (over age 35) may have a greater chance of developing breast cancer. Breast-feeding may help to lower your breast cancer risks (Cuzick, J. 2010).
- **High breast density:** Women with less fatty tissue and more glandular and fibrous tissue may be at higher risk for developing breast cancer than women with less dense breasts (Cuzick, J. 2010).
- **Certain breast changes:** Certain benign (noncancerous) breast conditions may increase breast cancer risk (Cuzick, J. 2010).
- **Menstrual history:** Women who start menstruation at an early age (before age 12) and/or menopause at an older age (after age 55) have a slightly higher risk of breast cancer. The increase in risk may be due to a longer lifetime exposure to the hormones estrogen and progesterone (Cuzick, J. 2010).
- **Being tall:** If women's are taller than average, they are more likely to develop breast cancer than someone who's shorter than average. The reason for this isn't fully understood, but it may be due to interactions between genes, nutrition and hormones (Cuzick, J. 2010).

1.9.4 Lifestyle

- **A sedentary lifestyle:** Physical activity in the form of regular exercise for four to seven hours a week may help to reduce breast cancer risk (Cuzick, J. 2010).

- **Heavy drinking:** The use of alcohol is linked to an increased risk of developing breast cancer. The risk increases with the amount of alcohol consumed (Cuzick, J. 2010).

- **Calcium:** Some studies have found a relationship between calcium intake and lowered breast cancer risk (Cuzick, J. 2010).
- **Brassica vegetables:** In a study published in the *Journal of the American Medical Association*, biomedical investigators found that Brassicas vegetable intake

(broccoli, cauliflower, cabbage, kale and Brussels sprouts) was inversely related to breast cancer development. The relative risk among women in the highest decile of Brassica vegetable consumption (median, 1.5 servings per day) compared to the lowest decile (virtually no consumption) was 0.58. That is, women who consumed around 1.5 servings of Brassica vegetables per day had 42% less risk of developing breast cancer than those who consumed virtually none (Cuzick, J. 2010).

- **Night work:** Several studies have suggested that women who work at night—for example, nurses on a night shift—may have an increased risk of developing breast cancer. This is a fairly recent finding, and more studies are looking at this issue. Some researchers think the effect may be due to changes in levels of melatonin, a hormone whose production is affected by the body's exposure to light, but other hormones are also being studied (Cuzick, J. 2010).
- **Mushrooms:** In 2009, a case-control study of the eating habits of 2,018 women suggested that women who consumed mushrooms had an approximately 50% lower incidence of breast cancer. Women who consumed mushrooms and green tea had a 90% lower incidence of breast cancer. A case control study of 362 Korean women also reported an association between mushroom consumption and decreased risk of breast cancer (Cuzick, J. 2010).
- **Iodine deficiency**: The protective effects of iodine on breast cancer have been postulated from epidemiologic evidence and described in animal models (Cuzick, J. 2010).

1.9.5 Previous treatments

- **Birth control pills:** Using oral contraceptives within the past 10 years may slightly increase the risk of developing breast cancer. The risk decreases over time once the pills are stopped (Benjamin et al., 2014).
- **Combined post-menopausal hormone therapy (PHT):** Using combined hormone therapy after menopause increases the risk of developing breast cancer. Combined HT also increases the likelihood that the cancer may be found at a more advanced stage (Benjamin et al., 2014).

- **Diethylstilbestrol exposure (DES):** Previous use of DES, a drug commonly given to pregnant women from 1940 to 1971 to prevent miscarriage, may slightly

increase the risk of developing breast cancer. Women whose mothers took DES during pregnancy may also have a slightly higher risk of breast cancer (Benjamin et al., 2014).

- **Radiation exposure:** Women who, as children or young adults, had radiation therapy to the chest area as treatment for another cancer have a significantly increased risk for breast cancer (Benjamin et al., 2014).

1.10 Controversial or disproven factors

1.10.1 Antiperspirants

Internet and e-mail rumors have suggested that chemicals in underarm antiperspirants are absorbed through the skin interfere with lymph circulation, cause toxins to build up in the breast, and eventually lead to breast cancer. Based on the available evidence there is little if any reason to believe that antiperspirants increase the risk of breast cancer (Benjamin et al., 2014).

1.10.2 Bras

Internet and e-mail rumors and at least one book have suggested that bras cause breast cancer by obstructing lymph flow. There is no good scientific or clinical basis for this claim, and a recent study of more than 1,500 women found no association of bra use with breast cancer risk (Benjamin et al., 2014).

1.10.3 Induced abortion

Several studies have provided very strong data that neither induced abortions nor spontaneous abortions (miscarriages) have an overall effect on the risk of breast cancer (Benjamin et al 2014).

1.10.4 Breast implants

Several studies have found that breast implants do not increase the risk of breast cancer, although silicone breast implants can cause scar tissue to form in the breast. Implants make it harder to see breast tissue on standard mammograms, but additional x-ray pictures called ‘implant displacement’ views can be used to examine the breast tissue more completely. Breast implants may be linked to a rare type of lymphoma called ‘anaplastic large cell lymphoma’. This lymphoma has rarely been found in the breast

tissue around the implants. So far, though, there are too few cases to know if the risk of this lymphoma is really higher in women that have implants (Benjamin et al 2014).

1.11 Tools for early detection of breast cancer

Breast cancer screening looks for signs of cancer before a woman has symptoms. Screening can help find breast cancer early, when the chance of successful treatment is best. If patient are at high risk because of a strong family history of breast cancer, patient's doctor will develop a screening plan tailored to her unique situation (Gore, Gregori and Porter, 2014).

1.11.1 Breast awareness

Education and awareness alone may contribute in a favorable shift in the stage of breast cancer at presentation. Education can be achieved with very low costs, simple, and popular means, such as radio and television advertisement and programs. Education need to be culturally appropriate and targeted toward the individual population so that highest benefit can be gained. It is also important to educate men as well as women because men can facilitate early detection in their partner and help to reduce the barrier to seek care. In the United Kingdom, Stockton et al. found that in the 1980s before the national breast cancer screening program began; the rate of advance stage cancer was reduced dramatically. It is believed that this down staging was due to increased awareness that resulted from the greater presence of public education messages about early education. The important aspect of awareness is the dissemination of knowledge about that breast cancer is curable and if diagnosed early survival rate is good. With earlier stage at presentation and with good treatment facilities it is not a big problem. It is also important to educate health care providers, especially those who come in regular contact with women. These providers may be physicians, nurses, and midwives, medical students (Gore, Gregori and Porter, 2014).

1.11.2 Breast self-Examination

Breast self-examination (BSE) is a simple and cost effective method of breast cancer screening in limited resources countries. BSE is a formalized practice that a women is taught to examine her own breast regularly (usually monthly after 20 years.) During the breast self-examination (BSE), a woman systematically inspect, and palpate her each breast using her contra lateral hand with her ipsilateral arm raised above her head.

Women perform her examination both in lying and standing position. Usually it is better to examine the breast in front of mirror so that she can inspect any sort of asymmetry or dimpling. Breast self-exam is required monthly. Not every cancer can be found this way, but it is a critical step and should take person herself. BSE may have great value in terms of awareness and motivating women to see a health care provider when they find a lump. And the earlier response to symptoms may reduce the cancer stage at diagnosis. In addition, BSE may be an effective primary tool in breast health education (Gore, Gregori and Porter, 2014).

1.12 Breast Cancer Tests: Screening, Diagnosis, and Monitoring

1.12.1 Mammography

A low-dose x-ray exam of the breasts is to look for changes that are not normal. This type of mammogram uses x-rays to take more detailed images of areas that look abnormal on a screening mammogram. It is done every three year starting at age 40. At present time mammography is the gold standard for early detection of breast cancer but there are two limitations of mammographic screening. One is its cost and another is its technical complexity. As a result mammography is not recommended for countries with limited resources. One big criticism against Mammography is false positive results which might lead to range of adverse consequences among women without breast cancer. That's why the implementation of mammographic screening also demands strong quality assurance (Petrelli, 2014).

1.12.2 Ultrasonography

Using high-frequency sound waves, ultrasonagraphy can often show whether a lump is solid or filled with fluid. This exam may be used along with diagnostic mammography or MRI to answer questions about a specific area of the breast. Because it uses sound waves instead of X-rays, ultrasound provides information that is different and often complementary to the mammogram (Morse et al., 2014).

1.12.3 Breast MRI

Magnetic resonance imaging (MRI) can be used to look specifically at the breast. Each exam produces hundreds of images of the breast, cross-sectional in all three directions (side-to-side, top-to-bottom, front-to-back), which are then read by a radiologist. It can show lesions not visible through mammography or ultrasound. The American Cancer

Society recommends that certain women with an especially high risk of developing breast cancer have an MRI scan along with their yearly mammogram. Breast MRI is non-invasive and no radioactivity is involved. The technique is believed to have no health hazards in general (Morse et al., 2014).

1.12.4 Biopsy

One way to find out if a breast lump or abnormal tissue is cancer is by having a biopsy. During a biopsy, a surgeon, a pathologist or a radiologist removes a portion or all of the suspicious tissue. The suspicious tissue is examined under a microscope by a pathologist who checks for cancer cells and makes the diagnosis. The following are descriptions of different types of biopsies (Morse et al., 2014).

1.12.4.1 Fine Needle Aspiration (FNA) Biopsy

FNA samples a woman's lump using a thin small needle that leaves a mark no bigger than a needle stick from a blood test. FNA often allows us to diagnose a lump within two to three days (Morse et al., 2014).

1.12.4.2 Stereotactic Core Biopsy

This procedure was developed as a less invasive way to obtain tissue samples for diagnosis. It involves removing tissue with a biopsy needle while breast is compressed in a way similar to a mammogram. This biopsy requires less recovery time than surgery and causes no significant scarring. Physician and radiologist may consider this procedure if there is an abnormality on a mammogram that cannot be felt. Radiologist decides if this procedure is technically possible for condition and physician decides if it's appropriate for situation (Morse et al., 2014).

1.12.4.3 Needle (Wire) Localization Biopsy

This type of biopsy involves the use of a needle and wire to locate the abnormal tissue and surgery to remove it. Needle localization is performed when you have an abnormality on a mammogram that cannot be felt. It is an outpatient biopsy that is done in two steps on the same day (Morse et al., 2014).

1.12.5. Bone scan for metastatic breast cancer

A bone scan is an imaging test that can detect cancerous cells, evaluate fractures in the bones, and monitor other bone conditions, such as infections and arthritis. During a bone scan, a small dose of radioactive material is injected into a vein, where it travels through the bloodstream. The material collects in the bones and is detected by a scanner using nuclear imaging to reveal cell activity and function in the bones. A bone scan can detect cancer that has metastasized to the bone from a different primary site, such as the breast, prostate or lungs. It may also be used to evaluate bone health before treatment. A bone scan can reveal if the breast cancer has spread to the bone. By capturing images of bones on a computer screen or on film, bone scans can reveal important information, such as the location of the bone metastasis (Morse et al., 2014).

1.12.6 Clinical Breast Examination

Clinical Breast Examination (CBE) is a standardized procedure whereby a health care provider examines a women's breast, chest wall, and axillae. The examination consist of 1) Visual inspection of the breast while the women in upright position and her arms relaxes and then rose above her head. 2) Palpation of the axillae and supraclavicular fossae when the women in the upright position and 3) palpation of the breasts while the women both in upright and supine positions. The examiner inspects the breast visually for symmetry, skin of the breast, areola, and nipple for edema, erythema, puckering, dimpling, or ulceration, all of which can be evidence of underlying masses. The provider palpates the regional axillary nodes. Enlarged hard, matted or fixed nodes can indicate cancer. CBE training is necessary as a key contributor to prompt diagnosis of symptomatic disease. In addition, it is likely to be use in area where mammography examination is unavailable during and after treatment. If patients are being treated for breast cancer, her doctor will likely recommend that patient come in for a breast physical exam every 3 to 4 months. Regularly scheduled physical exams will continue after finishing treatment (Petrelli, 2014).

1.13 Breast Cancer Treatment

Treatments for breast cancer include surgery as well as radiation, chemotherapy and hormonal therapy. These treatments are either local or systemic. Local treatments, such as surgery and radiation therapy, remove, destroy or control cancer cells in specific areas.

Systemic treatments, such as chemotherapy and hormonal therapy, destroy or control cancer throughout the body. Depending on your condition, you may receive one treatment or a combination at the same time or in succession (Mahajan et al., 2013).

1.13.1 Surgery

Surgery is a common treatment for cancer. Several procedures may be used, from lumpectomy to breast reconstruction (Mahajan et al., 2013).

1.13.2 Lumpectomy

In this procedure, a surgeon removes the cancer and some normal tissue around it. Lumpectomy usually results in little change in breast appearance. Some lymph nodes may be removed from under your arm to determine if cancer has spread. Radiation therapy is typically performed to destroy any cancer cells that may remain (Mahajan et al., 2013).

1.13.3 Partial or Segmental Mastectomy

Depending on the size and location of the cancer, this procedure can conserve much of the breast. The surgeon removes the cancer, some breast tissue, the lining over the chest muscles below the tumor and usually some of lymph nodes under the arm. In most cases, radiation therapy follows (Mahajan et al., 2013.)

1.13.4 Sentinel Lymph Node Disection

One or more of sentinel lymph nodes are removed in this procedure. To locate a sentinel node, the surgeon injects a blue dye (isosulfan blue) into the skin where the breast cancer is or was. The blue dye is picked up by the lymphatic vessels and travels to a sentinel node. A lymph node is removed and sent to pathology, where it is examined. The sentinel lymph node is believed to most likely contain disease if the cancer has spread from the breast to the lymph nodes. Other lymph nodes may or may not be removed, depending on your situation. This procedure typically takes about an hour (Mahajan et al., 2013).

1.13.5 Modified Radical Mastectomy

In this procedure, a surgeon removes the breast, some of the lymph nodes under the arm, and the lining over the chest muscles, and sometimes part of the chest wall muscles (Mahajan et al., 2013).

1.13.6 Radical Mastectomy

The surgeon removes the breast, chest muscles and all the lymph nodes under the arm in a radical mestectomy. This was the standard operation for many years, but now is performed only when a tumor has spread to the chest muscles (Mahajan et al., 2013).

1.13.7 Breast Reconstruction

Breast reconstruction, or surgery to rebuild a breast, is often an option after the removal of a breast. Health insurance plans in California pay for this surgery, including surgery to make both breasts similar in shape and size. A reconstructed breast will not have natural sensation, but can have a natural appearance. The best cosmetic results are achieved with immediate reconstruction, performed at the same time as the mastectomy. The choice regarding reconstruction is based on personal preferences and will not affect outcome (Mahajan et al., 2013).

1.13.8 Radiation Therapy

Radiation therapy is the use of high-energy rays or particles to treat disease. It works by killing tumor cells or inhibiting their growth and division. Years of study by radiation oncologists have led to the widespread use of effective, tolerable doses of radiation. It is used to treat early stage breast cancer along with surgery. It may be used in more advanced breast cancer to control the disease or to treat symptoms such as pain (Mahajan et al., 2013).

1.13.9 Chemotherapy

Chemotherapy uses drugs to kill cancer cells. For breast cancer, it is usually administered as a combination of drugs given orally or by injection. Chemotherapy enters the bloodstream and travels throughout your body. The treatment is most commonly used to decrease the chance that cancer will recur after surgery, shrink breast cancer after surgery when the tumor is large or if it is inflammatory, and to control metastatic breast cancer which has spread to other organs in the body (Mahajan et al., 2013).

1.13.10 Hormonal Therapy

Hormonal therapies change the hormonal environment in your body, which impacts the growth and behavior of some breast cancers. If breast cancer produces one of the hormone receptors — estrogen receptor (ER) or progesterone receptor (PR)- then hormonal therapy is effective in treating early-stage, metastatic or advanced breast cancer and preventing recurrence (Mahajan et al., 2013).

1.14 Breast cancer: worldwide overview

Breast cancer is the most common cancer in women worldwide. It is also the principle cause of death from cancer among women globally. Despite the high incidence rates, in Western countries, 89% of women diagnosed with breast cancer are still alive 5 years after their diagnosis, which is due to detection and treatment (Parkin, 2008).

The UK and USA have one of the highest incidence rates worldwide (together with the rest of North America and Australia/New Zealand), making these countries a priority for breast cancer awareness. View the map below to see how which country is impacted by breast cancer (Bray, McCarron and Parkin, 2004)

According to the World Cancer Research Fund which has been analyzing scientific evidence on cancer since 1990, breast cancer rates are highest in Belgium where 109.2 of every 100,000 people develop the disease. The UK has the 11th highest rate of breast cancer worldwide, ahead of other European countries including Italy and Germany. There appears to be a relatively strong correlation between a country's wealth and its breast cancer rates - several countries in Asia and central Africa have some of the lowest rates in the world. Despite this, there is a considerable gap between breast cancer rates in the UK (89.1 per 100,000 women) and in the US (76 per 100,000 women). (Boyle and Howell, 2010)

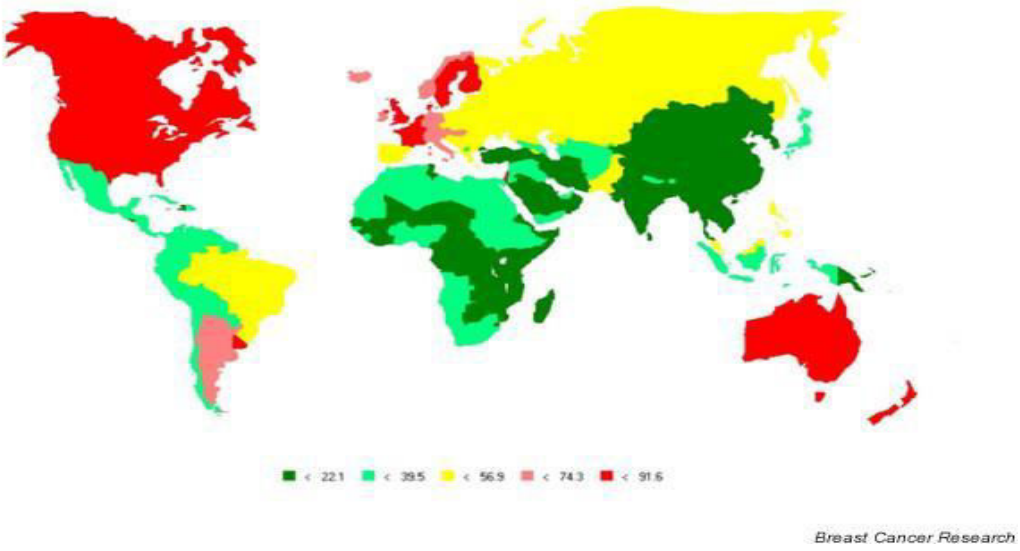

Figure 1.2: Breast cancer incidence worldwide (Bray, McCarron and Parkin, 2004)

According to the American Cancer Society, breast cancer is less common at a young age (*i.e.,* in their thirties), younger women tend to have more aggressive breast cancers than older women, which may explain why survival rates are lower among younger women 95% of new cases and 97% of breast cancer deaths occurred in women 40 years of age and older. (Boyle and Howell, 2010)

Table 1.2: Breast Cancer Survival Rates in the world

Breast Cancer Survival Rates	
Five years after diagnosis	89%
Ten years after diagnosis	82%
Fifteen years after diagnosis	77%

Source: American Cancer Society (Boyle and Howell, 2010)

According to the American Cancer Society, white women develop breast cancer at a higher rate than African-American women, but African-American women are more likely to get breast cancer before they are 40, and are more likely to die from it at any age.

Today, there is no population around the world with a truly low risk of breast cancer and no woman in the world at a truly low risk of developing the disease. The global burden of breast cancer doubled between 1975 and 2000. It seems certain to double again between now and 2030 and the great majority of this burden will fall on low-income and lower middle-income countries, where the resources to deal with the current situation, never mind future increases, are absent to a great degree (Boyle and Howell, 2010).

Table 1.3: Breast cancer survival rates by stage (Barton et al., 1999).

Stage	5-year Relative Survival Rate
0	100%
I	100%
II	93%
III	72%
IV	22%

1.15 CTCA and SEER Survival Analysis

At Cancer Treatment Centers of America, the survival rates of the group of metastatic breast cancer patients reported in the Surveillance, Epidemiology and End Results (SEER) database of the National Cancer Institute. SEER is a source of population-based information about cancer incidence and survival in the United States that includes the stage of cancer at the time of diagnosis and patient survival data. SEER collects information on cancer incidence, prevalence and survival from specific geographic areas that represent 28% of the population of the United States. Therefore, we asked an independent biostatistician to analyze both the survival rates of the group of CTCA patients and the group of patients included in the SEER database. The objective of this analysis was to see how long each group of patients survived after their diagnosis. The results are shown in the chart below (McMenamin et al., 2005)

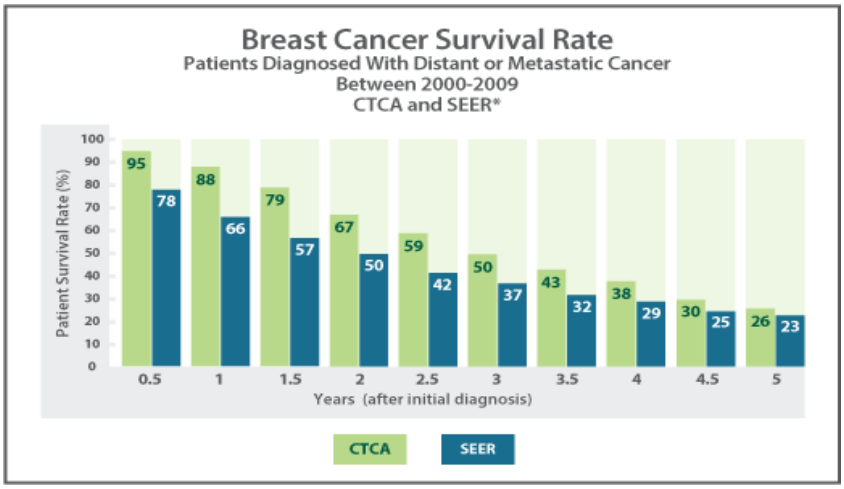

Figure 1.3: CTCA and SEER survival rate (McMenamin et al., 2005).

In the case of metastatic breast cancer, 79% of CTCA patients who were diagnosed between 2000 and 2009 and/or at least partly treated at our hospitals survived 1.5 years after the initial diagnosis, while 57% of the SEER metastatic breast cancer patients survived for at least that long (McMenamin et al., 2005).

1.16 Situation of Breast Cancer in Bangladesh

Breast cancer is most common among women in Bangladesh. About 20,000 women die of breast cancer every year in Bangladesh, according to health experts. It is the 2nd leading cancer in women after cervical carcinoma (Rahim, 1986).Late presentation with advance stage is the common feature of breast cancer patient in Bangladesh, when it is extremely difficult to manage the deadly disease. It is easily understandable that the incidence and mortality of breast cancer is growing at a fast rate. But as we do not have any cancer registry along with relevant data it is difficult to say the exact situation in Bangladesh. A survey done in 2001 showed that 22000 women were affected every year by breast cancer and 17000 (77%) of them died. However this figure is far more less than the real figure, simply because very few cases is diagnosed and reported. Many patients die with unnoticed cancer. There may be many reasons behind this, but studies in many other countries show that poor or no knowledge, ignorance, lack of awareness and misbelieve is one of the leading cause of this fastest silent killer (Rahim, 1986).

Bangladesh is a Muslim country where more than 80% of the rural women is illiterate, brought up in a conservative Muslim value or old traditional customs, it is not very easy to visit doctor or just informed the guardian either her husband or parents that she got a

breast problem. Society is not very friendly and open to discuss about reproductive or and sexually transmitted diseases especially among women. It is clearly understandable why late stage breast cancer is the hall mark presentation in Bangladesh. Health seeking behavior is one of the important aspects of late presentation. Several studies shows that misconception and disbelieve is a significant factor for delayed health seeking behavior in Bangladesh where educational level is low and more than 40% people live below one dollar per day. Further, women are not self dependent and cultural norms and religious values are unfavorable. More over government support is limited there delayed health seeking behavior is quite apparent. Furthermore, a mother or a woman is the sole care taker of the well being of their family and their children, so they can pay less attention to their own health. Most of the women are afraid of cancer. There is a general feeling of hopeless and helpless if they got cancer because they believe this is not curable and there is not much they can do until wait for death (Robert, 2002).

Cancer and particularly breast cancer is on the bottom of their priority list in Bangladesh whether communicable diseases, infectious diseases and chronic diseases is a major health issue and government, non government organization and international partners all are giving their utmost effort to cope with these diseases. That's why there is no much infrastructure and facilities to fight against breast cancer. One Cancer research and treatment institute exists, but it is very limited in contrast to the growing needs. Due to lack of availability of diagnostic tools, cancer chemotherapy agent, modern radiation equipment and palliative care and rehabilitation, the existing institute is not functioning properly. The value of diagnosis of breast cancer at an early stage is well documented. Early diagnosis not only influence the better prognosis and long term survival, it is also associated with stage of cancer and mode of treatment. Early detection can be successfully achieved through a population based mass screening program. In Bangladesh, there is no population based mammography screening program and it seems that it is not feasible and realistic approach for a limited resource country. However, there should be some sort of awareness program to educate mass people regarding breast cancer sign symptoms and BSE, so that women health seeking behavior can be improved and early diagnosis become possible (Benjamin *et al* 2003; Robert, 2002).

Chapter 2

LITERATURE REVIEW

2.1 Breast cancer in South Asia: A Bangladesh perspective

In 2014, a study was conducted to see the knowledge of breast cancer. South Asian countries are facing a hidden epidemic of breast cancer. As in other developing countries, due to lack of breast cancer awareness in Bangladeshi population and inadequate access to health care, the majority of the patients is diagnosed at the advanced stage of the disease. Early detection has a crucial impact on the overall treatment outcomes. To battle against breast cancer in resource-limited countries like Bangladesh, it is not feasible to set up a parallel health service system solely dedicated for cancer. Therefore, a cost-effective public health strategy is needed, which reaches a large number of women in the country. Considering all these issues, we propose an innovative female-based primary healthcare approach focusing on awareness, screening and early detection of breast cancer in Bangladesh. This preventive strategy could be a model for other resource-limited developing countries (Hossain, Ferdous and Karim-Kos, 2014).

2.2 Knowledge, Attitude and Practice Regarding Breast Cancer among Medical Students of Bangladesh.

Breast cancer in women is a major health burden both in developed and developing countries. It is the second leading cause of death in women worldwide as well as in Bangladesh. Recent global cancer statistics shows that global incidence is rising at a faster rate especially in developing countries like Bangladesh. But still breast cancer is not on the top of the priority list for the policy maker's donors and health professionals. But the prevailing situation can be more devastated if early attention is not given. To concentrate on this fast growing health problem we need to know the overall situation concerning incidence, prevalence, risk group, diagnostic and treatment status survival and mortality rate first to make a comprehensive policy to cope with breast cancer situation in Bangladesh. This proposed protocol study is designed to assess the knowledge attitude and practice regarding breast cancer in medical student in Bangladesh. This study population is not only the health professionals but also represent the higher educated population of Bangladesh. Their level of knowledge will reflect or give us an idea about the mass general lower educated population in Bangladesh. The proposed study will be conducted during February 2008 to May 2008 on 3rd year to 5th year medical students of different medical colleges of Bangladesh through a cross-sectional study. Data will be collected by a self administered questionnaire (Muhammad, 2007).

2.3 Breast Cancer and some Epidemiological Factors: A Hospital Based Study

A case control study was conducted from July 2009 to June 2010, in the National Institute of Cancer Research and Hospital, Dhaka, Bangladesh on 262 biopsy proven cases of breast cancer from National Institute of Cancer Research and Hospital and 262 matched controls of acute diseases from Dhaka Medical College Hospital. Religion, residential status and age (±2 years) were matched. Statistical analysis was carried out using conditional logistic regression, odds ratios, chi-square and t- test with SPSS software (V-17). Multivariate analysis showed that higher education (OR=1.72), personal income (OR=5.71), history of induced abortion (OR= 20.62), history of breast feeding (OR= 7.91), OCP users (OR= 1.47), current smokers (OR=6.78), personal history of breast disease (OR=10.99), family history of breast cancer (OR=3.85) and family history of other cancer (OR=2.21) were risk factors for breast cancer. Furthermore, having menarche at an early age (OR=0.35), giving birth to an early age (OR= 0.35), early menopause (OR= 0.22), longer duration of breast feeding (OR=0.30), parity of 2 and more (OR=0.29) and regular physical activity (OR=0.58) were shown to be protective factors. Physical inactivity, being menopause, positive family history of breast cancer and history of induced abortion were found important risk factors. Longer duration of breast feeding should be encouraged for its protective effect. Study revealed that the women who have one or more of the above risk factors should be given special attention for breast cancer prevention (Jabeen *et al,* 2013).

2.4 Carcinoma Breast: A study in an urban Hospital, Bangladesh

A clinical study of old and new 43 cases of carcinoma (Ca) breast were carried out at Radiotherapy Department, Faridpur Medical College Hospital, Faridpur from January '99 to June 2001 with a view to see the initial stage at presentation, to evaluate the modes of treatment, response to treatment and find out the survival period after presentation. All the cases were under follow up. Female 97.68%, peak age incidence were (31-45 years) 48.84%, cytologically proved 90.70%, stages were I, II, III and IV 13.95%, 53.49%, 18.61 % and13.95% respectively. Infiltrating ductal carcinoma 79.06%, adeno-carcinoma was 4.65%, medullary carcinoma 4.65%. Treatment completed only in 39.53% of cases. No evidence of metastasis were found in 69.72% cases after completion of treatment, and one year survival were 95.35%, 2.5 years survival were 81.39% and more than 5 years survival were 4.65% and expired 18.61 % (Ali et al, 2003).

2.5 A meta-analysis of the association between induced abortion and breast cancer risk among Chinese females

A study was conducted to evaluate the association between induced abortion (IA) and breast cancer risk among Chinese females. They searched three English databases (PubMed, ScienceDirect, and Wiley) and three Chinese databases (*CNKI*, *WanFang*, and *VIP*) for studies up to December 2012, supplemented by manual searches. Two reviewers independently conducted the literature searching, study selection, and data extraction and quality assessment of included studies. Random effects models were used to estimate the summary odds ratios (ORs) and the 95 % confidence intervals (CIs).A total of 36 articles (two cohort studies and 34 case–control studies) covering 14 provinces in China were included in this review. Compared to people without any history of IA, an increased risk of breast cancer was observed among females who had at least one IA (OR = 1.44, 95 % CI 1.29–1.59, $I^2 = 82.6$ %, $p < 0.001$, $n = 34$). No significant publication bias was found among the included studies (Egger test, $p = 0.176$). The risk increased to 1.76 (95 % CI 1.39–2.22) and 1.89 (95 % CI 1.40–2.55) for people who had at least two IAs and at least three IAs, respectively. Subgroup analyses showed similar results to the primary results. Meta-regression analysis of the included studies found that the association between IA and breast cancer risk attenuated with increasing percent of IA in the control group ($\beta = -0.022, p < 0.001$).IA is significantly associated with an increased risk of breast cancer among Chinese females, and the risk of breast cancer increases as the number of IA increases. If IA were to be confirmed as a risk factor for breast cancer, high rates of IA in China may contribute to increasing breast cancer rates (Yeo et al, 2014).

2.6 A Study on Risk Factors of Breast Cancer among Patients Attending the Tertiary Care Hospital, in Udupi District

A study was conducted by Ashok and Kamath to see the factors associated with breast cancer. To study the association between breast cancer and selected exposure variables and to identify risk factors for breast cancer. A hospital based Case control study was conducted at Shirdi Sai Baba Cancer Hospital and Research Center, Manipal, Udupi District. Total 188 participants were included in the study, 94 cases and 94 controls. All the study participants were between 25 to 69 years of age group. The cases and controls were matched by ± 2 years age range. Non vegetarian diet was one of the important risk factors (OR 2.80, CI 1.15-6.81). More than 7 to 12 years of education (OR 4.84 CI 1.51-

15.46) had 4.84 times risk of breast cancer as compared with illiterate women. The study suggests that non vegetarian diet is the important risk factor for Breast Cancer and the risk of Breast Cancer is more in educated women as compared with the illiterate women (Mahajan et al., 2013).

2.7 The changing global patterns of female breast cancer incidence and mortality

One in ten of all new cancers diagnosed worldwide each year is a cancer of the female breast, and it is the most common cancer in women in both developing and developed areas. It is also the principal cause of death from cancer among women globally. We review the descriptive epidemiology of the disease, focusing on some of the key elements of the geographical and temporal variations in incidence and mortality in each world region. The observations are discussed in the context of the numerous aetiological factors, as well as the impact of screening and advances in treatment and disease management in high-resource settings (Bray, McCarron and Parkin, 2012).

2.8 Breast cancer follow-up: literature review and discussion

This paper presents a review of the evidence for long-term breast cancer follow up to determine if routine clinical review post treatment for breast cancer has benefits for patients. There is little evidence that clinical review of patients beyond 3 years post-diagnosis leads to improved patient survival. Separate to survival there is a dearth of inquiry relating to the value of long-term clinical review of patient in terms of psychological outcomes, quality of life, patient satisfaction, access to specialist advice regarding management of symptoms, and reassurance. Regardless of supporting evidence, most breast units in the UK continue to undertake routine six monthly clinical reviews of patients up to a minimum of 5 years. A literature search for the period 1989 to January 2006 was undertaken using the CINAHL, MEDLINE, and PsychINFO databases. Keywords such as 'cancer follow-up', 'cancer survivorship', and 'psychological outcomes of cancer' were utilised. Hand searching was also undertaken. Overall a paucity of evidence was found in relation to the long-term needs of breast cancer survivors. Alternatives to hospital-based follow-up are reported such as GP or nurse-led follow-up, but the fundamental question of the importance of follow-up in relation to psychological morbidity and quality of life still remains unanswered. Further research is needed to investigate the importance of follow-up to patient survivorship. Research to explore the concept of point of need access, as well as the qualitative experiences of patients post-

discharge, informational needs at discharge and on-going psychosocial support is suggested. Ultimately this paper argues for a greater choice and involvement of patients in determining their future follow up needs, providing the patient with a personalized package of care based on risk assessment and subsequent education programs to empower patients towards self-management following discharge (Sheppard, 2007).

2.9 Participation in breast screening programs: A review

Sally, Elizabeth and Gilchrist prepared a review article on Participation in breast screening programs in 2002. They had found that despite recommendations by the American Cancer Society and other organizations for use of screening mammography, data on reported utilization of this procedure by American women show that these guidelines were not being met. They reviewed published studies that reported participation rates or that examined factors associated with participation in selected breast screening programs. In general, women at high risk due to age and family or personal history of breast disease were not more likely to participate in breast screening programs than women without those risk factors. The one group of variables that was fairly consistently associated with participation was the practice of other preventive health behaviors. Women who expressed more concern about their health and who were more knowledgeable about breast cancer screening and its benefits also were more likely to complete mammography. Approaches to increasing participation are discussed in the context of the literature on this subject (Vernon, Laville and Jackson, 2015).

2.10 Breast Cancer Risk-factor and Screening Awareness among Women Nurses and Teachers in Amman, Jordan

Madanat H. and Merrill R. performed a breast cancer awareness study of women in Jordan in 2002. This study used data from 163 nurses and 178 teachers surveyed in Amman to determine 2 dimensions of breast cancer awareness: general breast cancer awareness, defined as knowledge of risk factors associated with the disease and breast cancer screening awareness, defined as knowledge of breast self-examination and mammography. The survey instrument was based on 2 previously validated knowledge-based questionnaires in the literature (Breast Cancer Knowledge Test and the Comprehensive Breast Cancer Questionnaire). Analysis of covariance indicated that family history was associated with general breast cancer awareness. Profession, age, and family history significantly influenced breast cancer screening awareness. The average

percentage of correct responses to general breast cancer awareness was adjusted for select covariates (adjusted means). The adjusted mean general awareness score for nurses was not significantly different from that of teachers (P = .8470). Nurses were more aware than teachers of the importance of breast cancer screening and its techniques. The adjusted mean screening awareness score for nurses was 88.3%, compared with 73.1% for teachers. These results provide important information about the level of breast cancer awareness among women nurses and teachers in Jordan and may be useful for developing future prevention and screening education programs (Madanat and Merrill, 2002).

2.11 Low levels of breast cancer risk awareness in young women: An international survey

Victoria P. *et al* performed a survey based on risk awareness of breast cancer in 2001. At least a fifth of breast cancer cases in Western countries were likely to be due to modifiable lifestyle factors. Previous work has found that while women in Western countries were aware that breast cancer can be hereditary, their knowledge of the influence of lifestyle was poor. This survey investigated on the awareness of breast cancer risk factors in university students from 23 countries between 1999 and 2001. Data were collected on awareness of links with heredity, alcohol use, exercise, obesity, stress, smoking and diet. Almost a third of women were not aware that any of these factors influenced breast cancer. Just 57% were aware of the genetic link and fewer than 1 in 20 women correctly identified alcohol, exercise or obesity as factors influencing breast cancer. Stress and smoking were the most commonly chosen lifestyle risk factors although current data suggest that they have little actual impact on breast cancer risk. There was considerable international variation, with highest levels of awareness in students in the United States of America (USA). Knowledge of risk in this sample was poorer than previously observed in older women. Health messages concerning cancer in general may be more relevant for this age group, because of the lower salience of breast cancer for younger women (Victoria P. *et al,* 2001).

2.12 Breast Self Examination by teenagers: Outcome to a teaching program

Teaching breast self-care as breast changes occur in the adolescent girl can influence positive behaviors such as performing breast self-examinations and seeking regular professional breast examinations. Health promotion behaviors often are taught in high school, but little research has been performed on teaching breast health in a high school setting. Therefore, this descriptive study aimed to identify the beliefs, knowledge, and practices of breast self-examination in adolescent girls. A pre- and posttest design was used to determine whether a teaching program would change beliefs, knowledge, and practices of breast self-examination. The results of this study demonstrate that a one-time intervention can be successful in increasing breast self-examination practice and the knowledge of breast self-examination and cancer in adolescents. Before the intervention, approximately 66% of students said they never examined their breasts, and only 3% performed breast self-examination monthly. In 1 month after teaching, these percentages changed appreciably, with 32% of students reporting that they never practiced breast self-examination and 23% reporting that they practiced breast self-examination monthly (Ludwick and Gaczkowski, 2001).

2.13 Knowledge, attitudes and practice related to breast cancer: a survey of Arabic women.

A cross-sectional questionnaire survey was conducted to evaluate knowledge, attitudes, barriers, and practices related to breast cancer screening among Arabic women. A convenience sample was selected from 1,750 women aged 40-65 years who, for any reason, attended primary health care (PHC) clinics in Al-Ain, United Arab Emirates (UAE).Of the 1,750 invited women, 1,445 agreed to participate; 78 were excluded from analysis because of histories of breast cancer. Breast self-examination (BSE) was practiced by 12.7% of the study population, clinical breast examination (CBE) by 13.8%, and mammography by 10.3%. Knowledge about breast cancer screening was low in the study population. Women were infrequently instructed about or offered screening for breast cancer by health professionals. Being employed was an independent predictor for participation in the three screening examinations. Health workers infrequently offered screening examinations and women lacked adequate knowledge about breast cancer screening. Acquired information about barriers to screening may help in the design of effective screening programs for Arabic women (Bener *et al,* 2001).

2.14 Knowledge and attitude of Saudi female students towards breast cancer: A cross-sectional study

In Saudi Arabia, females suffering from breast cancer often present late when their cancer has progressed to advanced stages. Hence the overall survival rate is low. Medical help-seeking behavior of females may be influenced by their awareness about breast cancer. Therefore, a cross-sectional study was designed to assess the knowledge, attitude and practices of university students towards breast cancer. One hundred and fifty females from a university in Saudi Arabia completed a questionnaire intended to provoke their socio demographic information and knowledge, attitude and practices towards breast cancer. Data analysis was carried out using Statistical Package for the Social Sciences (SPSS) Version 19.Mean knowledge score was 16.6 out of 29. One hundred and six participants (70.7%) scored 50.0% and more. On the other hand, number of participants whose scores were below 50% was rather less (44; 29.3%). Variables like single, knowing of a friend/family member suffering from breast cancer or practice of breast self-examination were significantly related to participants' knowledge scores.50.7% participants admitted to carry out the breast self-examination procedure. Only 13 study participants (8.7%) had clinical breast examination. None of the participants had undergone mammography. Female university students have mild knowledge of breast cancer symptoms and management. They are also not clear about etiology and risk factors associated with breast cancer. Practice of clinical breast examination and mammography was rare in the participants. There is a need to enhance their knowledge regarding breast cancer and emphasize the need of breast cancer screening programs (Latif, 2014).

2.15 Beliefs and attitudes about breast cancer and screening practices among Arab women living in Qatar: a cross-sectional study

This study investigates beliefs, attitudes, and BCS practices of Arabic-speaking women in Qatar. A multicenter, cross-sectional quantitative survey of 1,063 (87.5% response rate) Arabic-speaking female Qatari citizens and non-Qatari residents, 35 years of age or older, was conducted in Qatar from March 2011 to July 2011. Associations between beliefs and BCS practice were estimated using chi-square tests and multivariate logistic regression analyses. Participants who adhered to BCS guidelines (BCS practice = Yes) were compared to those who did not (BCS practice = No).In addition to low levels of awareness and low participation rates in BCS, one quarter of the participants stated their doctors talked to them about breast cancer, and less than half of the women interviewed

believed breast cancer can be prevented. Women who engaged in BCS practice were more likely to have a doctor who talked to them about breast cancer, to believe they were in good–excellent health, that cancer can be prevented, or that cancer might be hereditary. The majority wanted to know if they had cancer and felt their health care needs were being met. The main reasons given for not planning BCS were lack of a doctor's recommendation, fear, and embarrassment. These findings indicate that a variety of channels (health care providers, media, breast cancer survivors, community leaders) should be utilized to create culturally appropriate breast cancer intervention programs and increased awareness of breast cancer, BCS, and the benefits of early detection of breast cancer. Employment of these measures will reduce breast cancer mortality rates among Arabic-speaking women living in the State of Qatar (Donnelly et al., 2013).

2.16 Improving Breast Cancer Outcomes among Women in China: Practices, Knowledge, and Attitudes Related to Breast Cancer Screening.

Breast cancer is a major public health issue and the most commonly diagnosed cancer for women worldwide. Despite lower incidence rates than those living in Western countries, breast cancer incidence among Chinese women has increased dramatically in the past 20 years. Nevertheless, there is a paucity of studies reporting the attitudes toward and practices of breast cancer screening among Chinese women. This cross-sectional study examined the practices, knowledge, and attitudes toward breast cancer screening (BCS) on a convenience sample of 400 Chinese women. . Among study participants, 75% of the women never had a mammogram and the top three barriers reported were low priority, feeling OK, and lack of awareness/knowledge toward breast cancer screening. The results from the logistic regression model showed increased self-efficacy; having performed monthly self-exams, and having had clinical breast exams in the past two years were significant correlates while demographic variables were not correlated with screening behaviors. The findings provide a foundation to better understand beliefs and practices of Chinese women toward BCS and highlight the critical need for general public, health professionals, and the health care system to work collaboratively toward improving the quality of breast cancer care in this population (Wu, Liu and Chung, 2012).

2.17 Breast self-examination: knowledge, attitudes, and practices among female health care workers in Tehran, Iran.

A cross-sectional study was conducted to examine the knowledge of breast cancer, attitudes toward breast self-examination (BSE), and practice of BSE among a sample of female health care workers in Tehran, Iran. Using a purposed questionnaire, a total of 410 women from seven health centers completed the questionnaire. The mean age of the respondents was 32.9 years (SD = 9.5), most (58%) were married, and family history of breast cancer was reported by 11%. Seventy-five percent of the women knew about breast cancer prevalence, but only 27% knew that breast pain is not a symptom of breast cancer. Although 73% of women did know that contact with a relative with breast cancer could not lead to development of breast cancer, the respondents' knowledge of risk factors of breast cancer was not satisfactory. With regard to women's attitudes toward BSE, the majority believed that it is not difficult and time consuming or troublesome (63% and 72%, respectively). Sixty-three percent of the respondents claimed that they know how to examine their breasts, but only 6% performed BSE monthly. The practice of BSE was significantly associated with age ($p = 0.01$), the level of education ($p < 0.0001$), personal history of breast problems ($p < 0.0001$), and knowledge of how to examine the breasts ($p < 0.0001$). The study findings suggest that the knowledge and behaviors of female health care workers concerning breast cancer is relatively poor and it needs to be improved. Considering the role that health care workers may play in communicating health behaviors to the general public, planning health education interventions for this group of females is essential (Mahmoodi M et al., 2002).

2.18 Knowledge and practices on breast and cervical cancer screening methods among female health care workers: a Sri Lankan experience.

A cross-sectional survey was conducted among 219 female health care workers including public health midwives (68.9%) selected from 6 districts in Sri Lanka using convenient sampling methods. A self-administered questionnaire was used as a pre-test in a capacity building training program to collect the data. The mean (SD) duration of work experience of the respondents was 12 years and 52.5% were aged over 35 years. Most (76.7%) were married, and a family history of cancer was reported by 24.2%. Over 98% knew about self breast examination. Even though 84.1% practiced it, only 47.9% practiced it on a monthly basis. Clinical breast examination and mammography were known by 94.1% and 64.3% respectively. Only 19.2% had undergone a clinical breast examination within one

year and 3.6% had ever undergone a mammography. Only 76.3% knew that a Pap smear detects precancerous stage of cervical cancer. Among 169 married workers, 73.4% had never had a Pap smear and only 17.2% had got it done within the preceding 5 years. Among the reasons for not doing a pap smear within 5 years, 47.0% believed it as not necessary, 17.3% due to fear/dislike, 23.2% as not having symptoms, 3% had not known about it and 3% not known about availability of services. The study findings suggest that the knowledge and practices on breast and cervical cancer screening methods among female health care workers need to be improved. Considering the role that health care workers play in communicating health behaviors to the general public, strengthening health education interventions for this group of females is essential (Nilaweera et al., 2012).

2.19 Practicing breast self-examination among women attending primary health care in Kuwait.

The purpose of this study was to identify the proportion of women practicing BSE, factors that could affect its performance and explore women's awareness about its practice steps. The study design can be differentiated into two components. The first was a cross-sectional survey to determine the prevalence of BSE. Recruitment efforts resulted in 510 women. BSE was practiced by 109. The second component of the study was a case-control study to identify factors associated with BSE, whereas practicing subjects (control) were compared with a randomly selected similar number of non-practicing females (cases). The prevalence of BSE was 21%. Most of the socio-demographic variables have no significant effect on the practice of BSE. Practicing women had sufficient level of knowledge about BSE, clinical breast examination, and mammography. They believed significantly that bloody discharge from the nipple, presence of masses in the breasts, abnormal arm swelling, nipple retraction and discoloration of the breast were signs and symptoms of breast cancer. About 35% of practicing women in the current study performed correctly $\leqslant$6 steps out of 12 steps. Only 21% of women attending PHC had ever practiced BSE. Even a high proportion of them were not aware of the correct steps of the procedure. Health education programs are essential to encourage and improve women's practice of BSE (Al-Azmy et al., 2013).

2.20 Knowledge, Attitude and Practice Regarding Hospital Delivery among Rural Married Women in Northern Bangladesh.

This descriptive cross-sectional study was conducted on the married women in their reproductive age (15-40y) belonging to 211 households of Shitlai village of Kahalu Thana of Bogra district in Bangladesh from January to April 2007. Using a semi-structured questionnaire, data were collected by door-to-door visits and through face-to-face interviews with the respondents. Considering the knowledge on safe motherhood and safe delivery, majority of the respondents (98.6%) mentioned that every pregnant mother should receive antenatal care, and 97.6% said that pregnancy is a period of risk. Regarding safety, 96.2% mentioned hospital delivery as safe, while 80.6% mentioned home delivery as a risk. Among the respondents, 70.1% said that ANC is important, 29.9% was found to be informed of child birth complications, 16.1% knew the duration of pregnancy, 8.1% knew the danger signs of pregnancy, 4.7% about emergency obstetric care (EOC), 4.3% about expected date of delivery (EDD), 2.4% about safe motherhood and 28.4% about the access of health facilities in the village. Among the respondents, 85.3% showed a positive attitude towards hospital delivery while 14.7% had a negative attitude. Study also showed that majority of the respondents (66.8%) had delivered at home, and only one fourth of the respondents delivered their index child in a hospital. Thus the study recommends to improve the knowledge, economic status, to change the decision making process through the launching of different activities with appropriate health programs (Yasmin et al., 2009).

2.21 The changing global patterns of female breast cancer incidence and mortality.

One in ten of all new cancers diagnosed worldwide each year is a cancer of the female breast, and it is the most common cancer in women in both developing and developed areas. It is also the principal cause of death from cancer among women globally. We review the descriptive epidemiology of the disease, focusing on some of the key elements of the geographical and temporal variations in incidence and mortality in each world region. The observations are discussed in the context of the numerous aetiological factors, as well as the impact of screening and advances in treatment and disease management in high-resource settings (Bray, McCarron and Parkin, 2004).

Significance of the study

Breast cancer is the most common cancer in women both in the developed and less developed world. It is estimated that each year, 76,000 women die of breast cancer in South Asia (India, Bangladesh, Nepal, Myanmar, Pakistan, and Tibet) and worldwide over 508 000 women died in 2011 due to breast cancer. Breast cancer is now the most common cancer among women in Bangladesh. Sixteen percent of the total cancer affected women in the country are victim to breast cancer. WHO ranked Bangladesh 2nd in terms of mortality rate of women in the country from breast cancer. Lack of awareness and early detection program in developing country is a main reason for escalating the mortality. For Bangladeshi women aged between 15-44 years, breast cancer has the highest rate of occurrence (Muhammad, 2007).

Therefore, in Bangladesh, we estimate an annual new breast cancer case burden of 30,000 women. The prevalence of breast cancer is expected to grow in South Asia due to a combination of increased life expectancy, population growth and adoption of "Western" lifestyles such as higher fat diets, reduced activity, reduced parity, delayed child bearing, and decreased breast feeding. It is projected that global breast cancer cases will grow from 1.4 million in 2008 to over 2.1 million cases in 2030. While high-income countries celebrate significant progress toward curing women with breast cancer, low-income countries like Bangladesh are only beginning to recognize the extent and severity of the disease (Story et al., 2012)

The study in Bangladesh on knowledge level checking is very few. There is no study on breast cancer other than on medical oriented people (Muhammad, 2007; Jabeen et al, 2013).

The US-based National Comprehensive Cancer Network guidelines for breast cancer management specifically state that even under the best of circumstances "there is not a single clinical situation in which the treatment of breast cancer has been optimized with respect to either maximizing cure or minimizing toxicity and disfigurement". In low- and middle-income countries with far fewer resources than the US, the circumstances are compounded by multiple factors associated with increased mortality for this disease. Addressing and remedying these inequities requires an exploration into the unique circumstances surrounding the complex barriers women face in receiving information, accurate and timely diagnosis, and effective treatment critical to reducing breast cancer morbidity and mortality (Story et al., 2012)

So, we have chosen the Bangladeshi female from different rural areas to conduct our study and our target was to judge the level of knowledge about breast cancer risk factors, awareness, early warning signs, and therapeutic and screening approaches. If we do the study on them, we will get idea what is there knowledge level about breast cancer, risk factors and preventing measures. Also we will get idea about their educational qualification which is appropriate for providing knowledge or not. This study will help to give us knowledge about the source of information which is appropriate or not. From this study we will get idea about their family history of breast cancer and the relationship with the patient. Also we will collect data about early menarche. This is also the high risk of breast cancer. It is really impossible or difficult to alter or modify genetically and environmental risk factors like age, positive family history, race or ethnicity. Is there any habitual pattern that can help in preventing that breast cancer or not. Physical activities, nutritious food those can lower the risk of breast cancer; whether they are doing it knowingly or unknowingly. There are some behavioral risk factors like obesity, lack of breast feeding, higher level of certain hormones, radiation, alcohol consumption and smoking. These can be controlled by changing the habitual pattern.

Aim of the study

The overall aim of the study was to develop a study plan for a cross sectional study to assess the knowledge and practice regarding breast cancer among female respondents in rural areas of Bangladesh.

Objective of the study

The main objective of this study is

- To find out the level of knowledge regarding breast cancer among all kind of women.
- To find out the presence of risk factors and symptoms associated with breast cancer among them.
- To find out their habitual patterns that may influence the formation, early diagnosis and prevalence of breast cancer.

Chapter 3

METHODOLOGY

3.1 Study Area

The study was conducted in different districts of Bangladesh among rural women.

I. Noakhali (100)
II. Comilla (80)
III. Gazipur (170)

3.2 Total Number of Respondent

Data was collected from 350 female persons of Noakhali (100), Comilla (80) and Gazipur (170).

3.3 Inclusion Criteria of Respondent

- Only female Respondent
- Age of the Respondents are 20 years old or above.

3.4 Exclusion Criteria

- Unwilling to participate or unable to comply with protocol requirements
- Any male respondents in the households and corporate offices were excluded.

3.5 Procedure

- For collecting data, a self administered questionnaire was prepared according to required information. The collected data were analyzed with the help of Microsoft Office Excel and filtered out accordingly for analysis. Some graphical representations were made from those analysis statuses.

Chapter 4

RESULT

4.1 Age of the female respondents

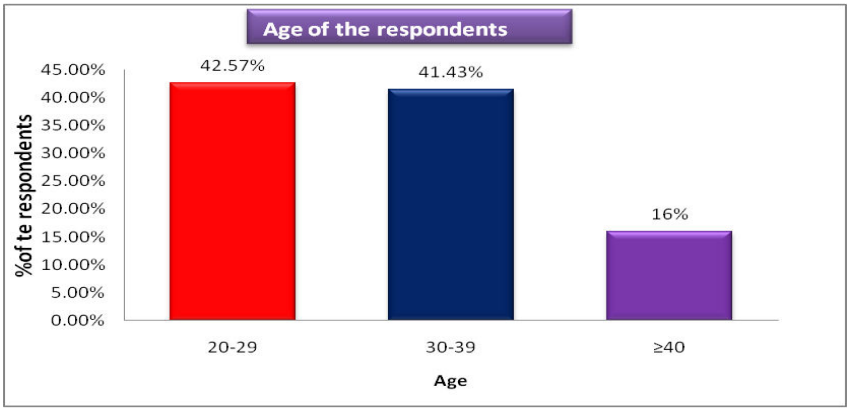

Figure 4.1: Age of the female respondents

Most of the respondents were aged between 20 to 29 years (42.57%). Almost 41.43% of the respondents were aged between 30-39 years. On the other hand only 16% subjects were aged above 40 years.

4.2 BMI Status of the respondents

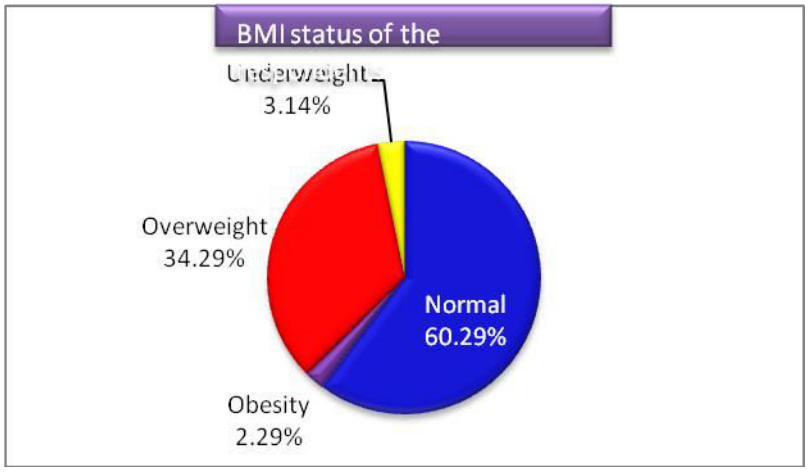

Figure 4.2: BMI Status of the respondents

The body mass index (BMI) is a measure of relative weight based on an individual's mass and height. It is defined as the individual's body mass divided by the square of their height – with the value universally being given in units of kg/m^2.

$$\text{BMI} = \frac{\text{mass(lb)}}{(\text{height(in)})^2} \times 703$$

Table4.1: Category according to BMI index (Assess body weight, 2015).

Category	BMI index	BMI status
Underweight	≤18.5	3.14%
Normal	18.5-24.9	60.29%
Overweight	25-29.	34.29%
Obese	≥ 30	2.29%

There is a BMI graph from which we can see that highest number of respondents had normal BMI status (60.29%). The underweight respondents were (3.14%). The overweight respondents were 34.29% and obese (2.29%) which is the lowest one.

4.3 Occupation of the female respondents

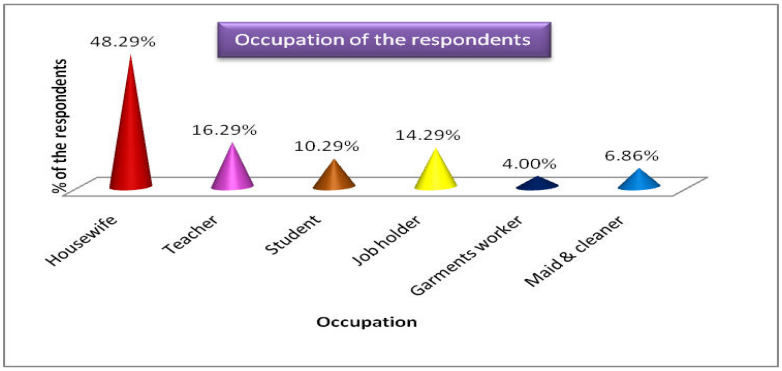

Figure: 4.3 Occupation of the female respondents

It has been found that the highest amount of respondents was house wife (48.29%) and the lowest amount of respondents was garments worker (4%). Among the respondents, 16.29% was teacher and14.29% was job holder and 10.29% was students.

4.4 Educational qualifications of the female respondents

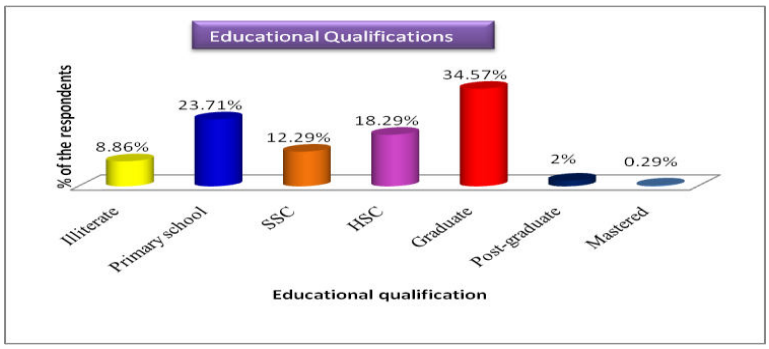

Figure 4.4: Educational qualifications of the female respondents

Most of the respondents were graduates (34.57 %). It has been found that post-graduate (2.29%) completed women were the lowest respondents. Moderate amount of respondents passed primary school (23.71%) and HSC (18.29%) completed respondents were also seen in this study. Among the respondents there were some illiterate (8.86%) and SSC (12.29%) completed too.

4.5 Marital Status

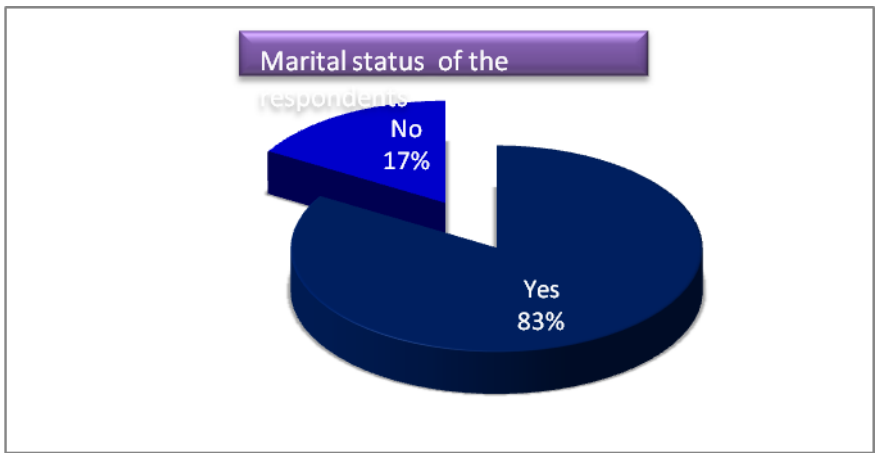

Figure 4.5: Marital status of the respondents

Most of the respondents (83%) were married and a few respondents (17%) were unmarried.

4.6 Having Children

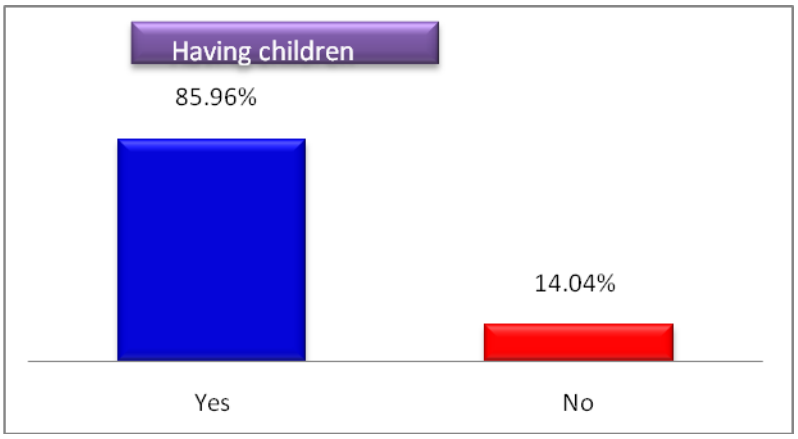

Figure 4.6: Having children of the respondents

Among the married respondents (83%), most of them had children (85.96%). A very few respondents (14.04%) had no children.

4.7 Number of Children

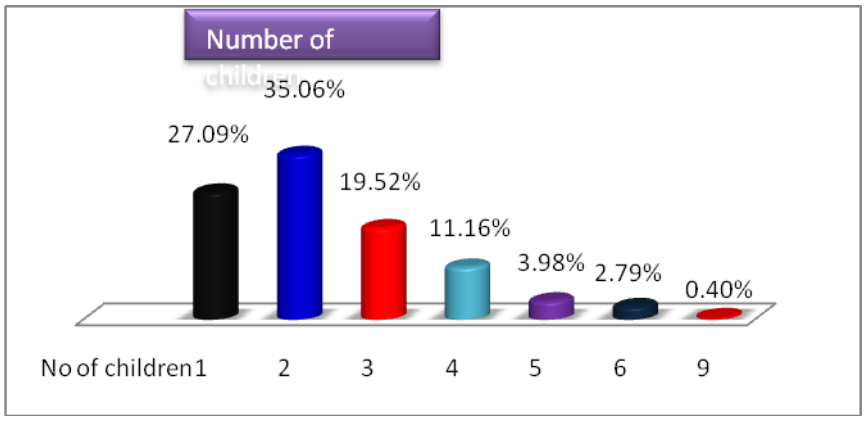

Figure 4.7: Number of children

Among the married respondents who had children, most of them had two children (35.06%). Only one respondent (0.40%) had nine children. Rest of the respondents had one children (27.09%) and more than one children; three (19.52%), four (11.16%), five (3.98%) and six (2.79%).

4.8 Knowledge about breast cancer among the respondents

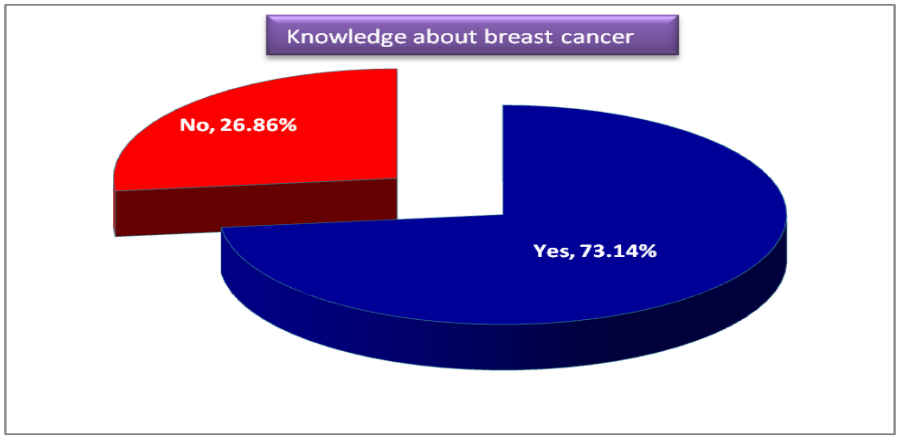

Figure4.8: Knowledge about breast cancer among the respondents

Majority of the respondents (73.14%) have knowledge about breast cancer On the other hand, around 26.86% respondents were unknown to breast cancer. Rest of the study conducted on the 256 respondents.

4.9 Source of Information about Breast Cancer

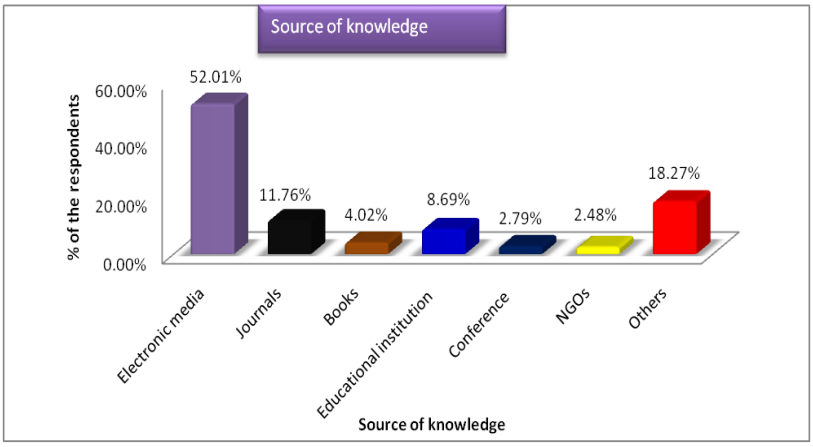

Figure 4.9: Source of Information about Breast Cancer

Most of the respondents had been informed about breast cancer from electronic media (52.01%). As the source of this information, other sources (18.27%) such as relatives, neighbors, colleagues and so on were the second highest one.

4.10 History of Breast Cancer in their Family

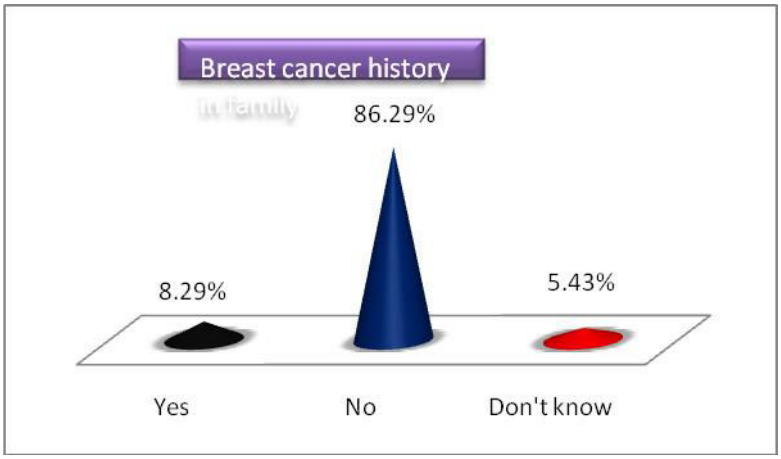

Figure 4.10: History of Breast Cancer in their Family

Most of the respondents (86.29%) had no history of breast cancer in their family. Only 8.29% had family history of breast cancer.

4.11 Relationship with Breast Cancer Patient of the respondents who had family history of breast cancer.

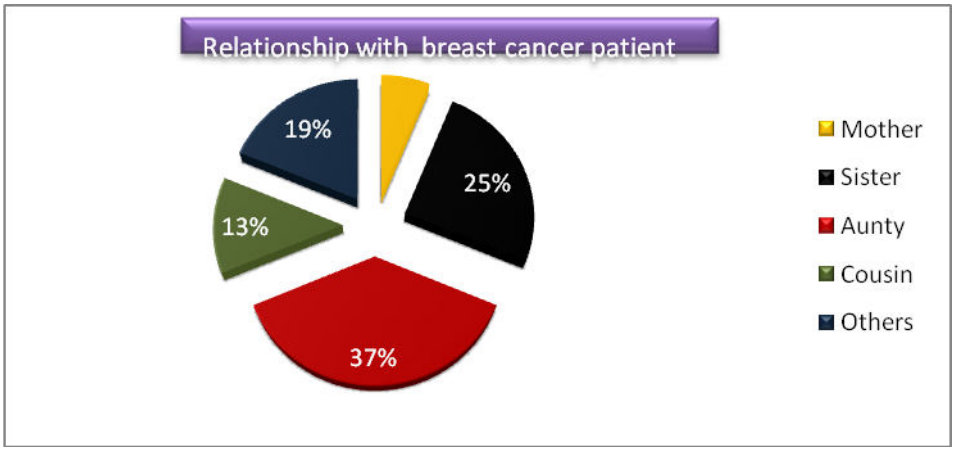

Figure 4.11 Relationship with Breast Cancer Patient of the respondents who had family history of breast cancer.

Among the respondents who had family history of breast cancer (8.29%), their relatives having breast cancer were their aunty (37%) and sister (25%), other relatives (19%), mother (6%) and cousin (13%).

4.12 Knowing of Reason behind Breast Cancer

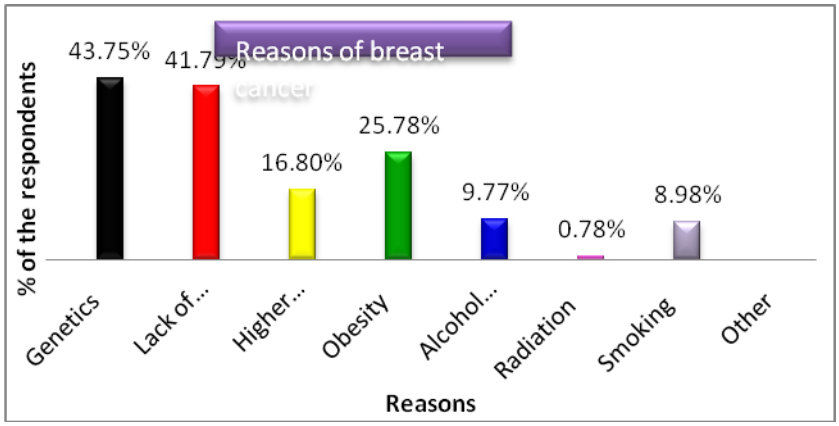

Figure 4.12: Knowing the Reason behind Breast Cancer

Most of the respondents (43.75%) knew that genetics is the main risk factor. and lack of breast feeding (41.79%) were one of the main causes of breast cancer. Obesity was said by 25.78% and 16.80% said that higher level of certain hormone can also lower the risk. It had been found that least respondents knew that alcohol consumption (9.77%) smoking (8.98%) and radiation (0.78%) can also cause breast cancer.

4.13 Knowledge of respondents about Signs of Breast Cancer

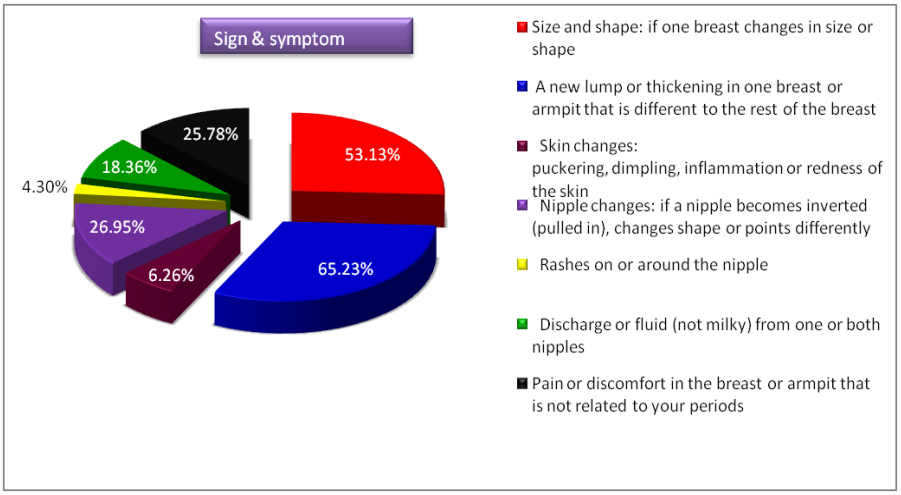

Figure 4.13: Knowledge of respondents about Signs and Symptoms of Breast Cancer

A painless breast lump, lump under the armpit and nipple discharge is most frequently identified symptoms of breast cancer. Among the respondents most of them identified a new lump (65.23%) size, shape (53.13%) nipple changes (26.95%) and pain (25.78%). Discharge or fluid (9.20%) and 6.83% mentioned rashes on or around the nipple. This study represents more than 100% results because the respondents said more than one sign and symptom.

4.14 Knowledge of Starting Menstruation Younger than Age 12 has a Higher Risk of Breast Cancer

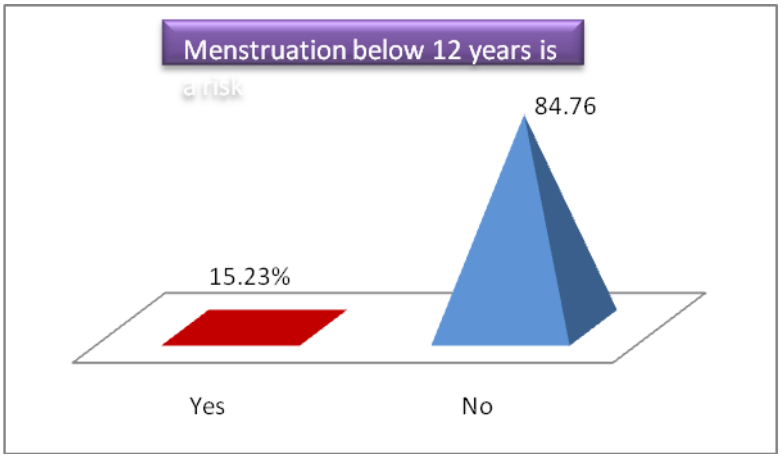

Figure 4.14: Knowledge of Starting Menstruation Younger than Age 12 has a Higher Risk of Breast Cancer

Starting menstruation younger than age twelve has a higher risk of breast cancer. It had been found that most of the respondents (84.76%) had no idea about this.

4.15 Age of Starting Menstruation Period

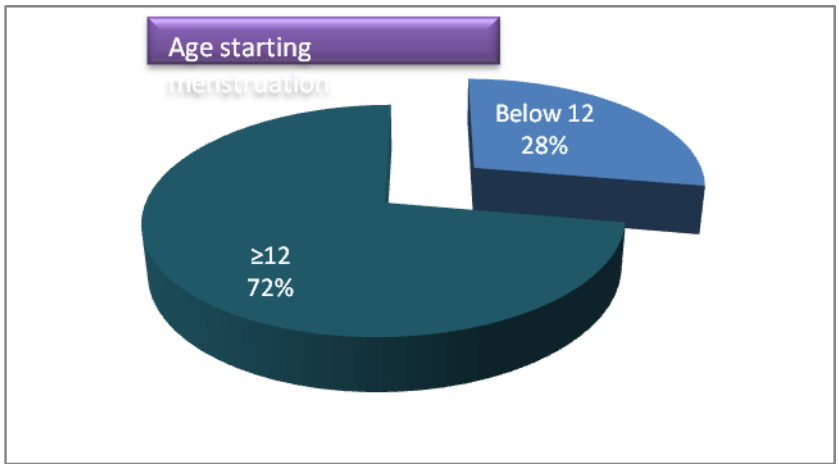

Figure 4.15: Age of Starting Menstruation Period

It had been found that most of the respondent's (72%) menstruation period had started at more than years of age. Although a significant number of respondents (28%) had been started menstruation between seven to eleven years of age.

4.16 Knowledge of Lowering the Risk of Breast Cancer

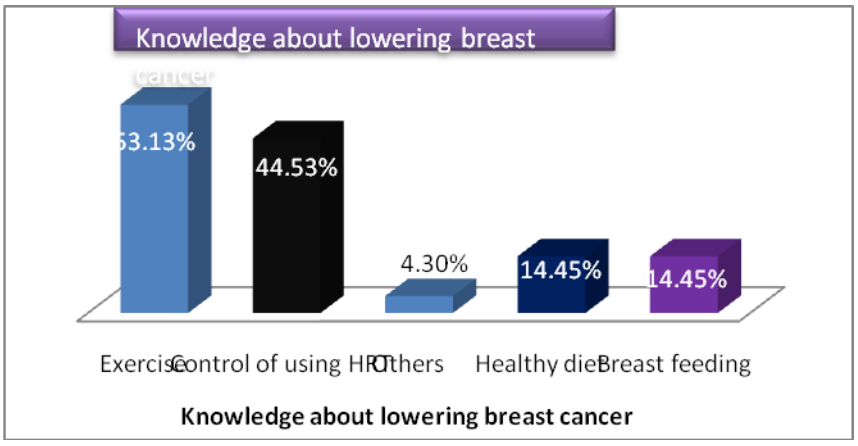

Figure 4.16: Knowledge of Lowering the Risk of Breast Cancer

Most of the respondents (53.13%) knew that exercise can lower the risk of breast cancer .Other respondents (44.53%) think that control use of Hormone Replacement Therapy (HRT) and about 14.45% respondents said breast feeding and healthy diet can lower the risk of breast cancer. This study represents more than 100% because the respondents said more than one reason.

4.17 Knowing that nutritious food (fruits and vegetables) can lower the risk of breast cancer

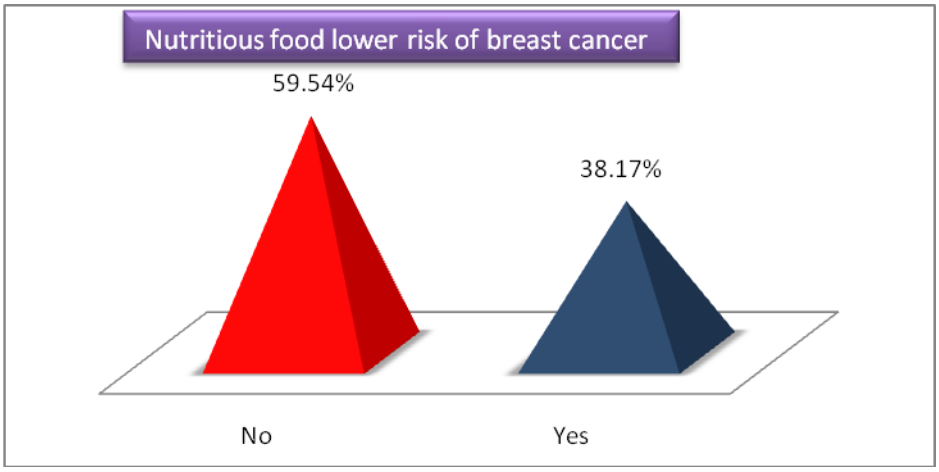

Figure 4.17: *Knowing that nutritious food (fruits and vegetables) can less the risk of breast cancer*

Most of the respondents (59.54%) did not know that nutritious food can lower the risk of breast cancer. Although, the percentage of respondents (38.17%) who knew that taking nutritious food can lower the risk of breast cancer, was significantly high.

4.18 Taking Nutritious Food

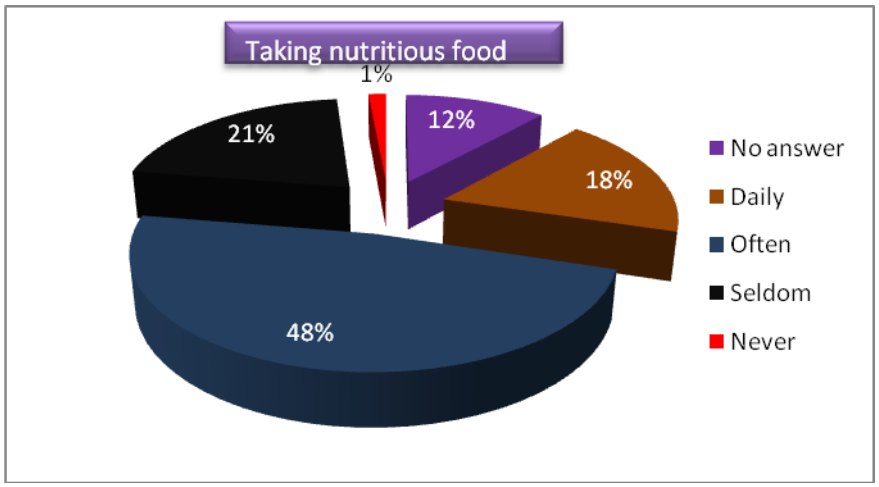

Figure 4.18: *Taking Nutritious Food*

It had been found that most of the respondents (48%) had been taken often nutritious food and only a few respondents (18%) take daily. Only a very few respondents (1%) had never been taken nutritious food.

4.19 Knowing that Physical Exercise can lower the Risk of Breast Cancer

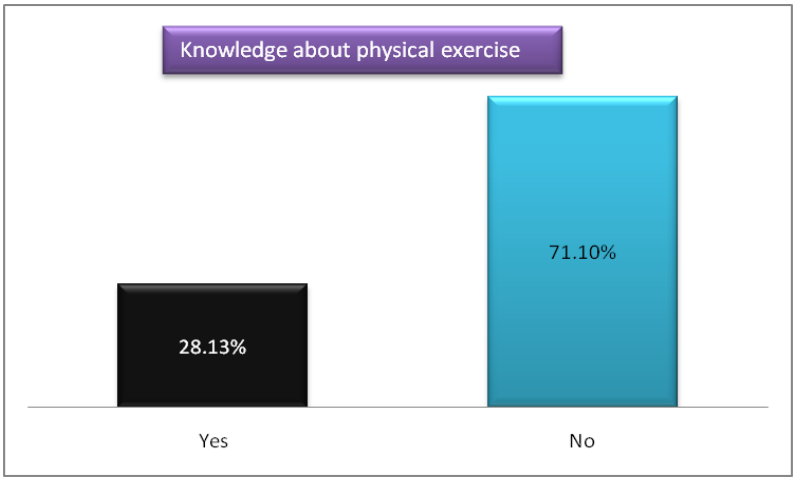

Figure 4.19: *Knowing that Physical Exercise can lower the Risk of Breast Cancer*

It had been found that most the respondents (71.10%) did not know this that physical exercise can lower the risk of breast cancer. Only 28.13% knew that physical exercise can lower the risk.

4.20 Performance Physical Activities

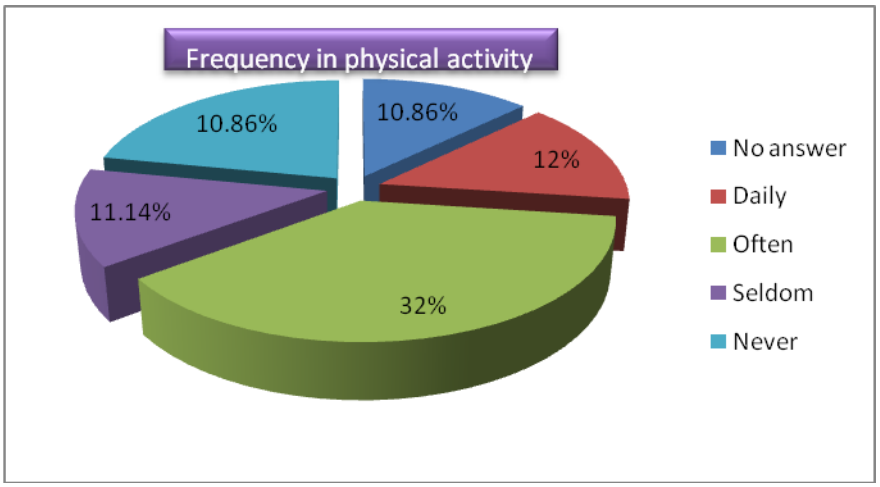

Figure 4.20: *Performance Physical Activities*

It had been found that a very few respondents (12%) had been doing exercise on a daily basis and some of the respondents (10%) had never been doing exercise but most of the respondents (32%) often performing physical exercise was significantly high which is their household choruses.

4.21 Regularly Observe/Feel Breasts for any Changes

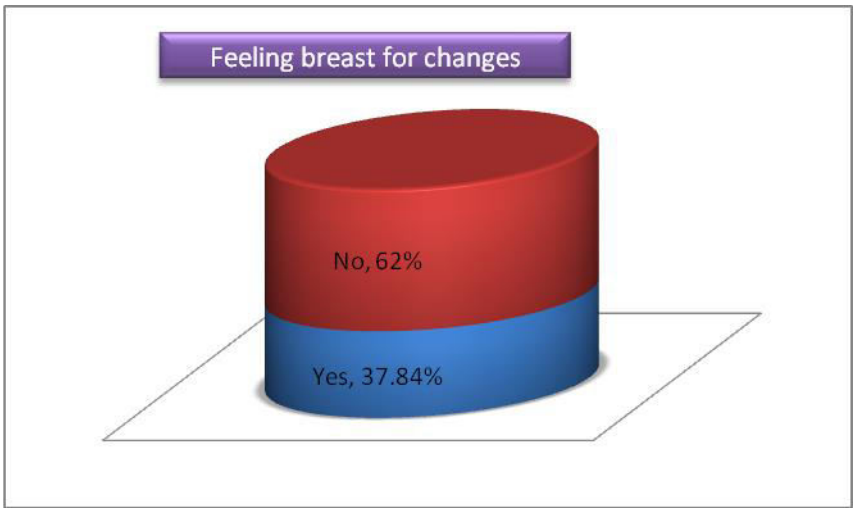

Figure 4.21: *Regularly Observe/Feel Breasts for any Changes*

It had been found that 37.84% respondents feeling breast for changes among the 14.16% respondents who know about it. Although, there is a significant number of respondents (62%) who did not do this on a regular basis.

4.22 Coming Contact with Radiation to Chest or Face

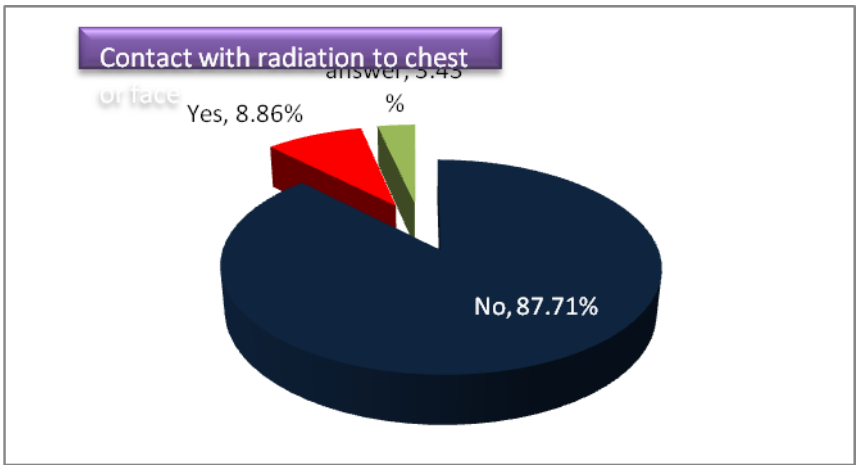

Figure 4.22: Coming Contact with Radiation to Chest or Face

Radiation can cause breast cancer. Among all the respondents, 87.71% had not ever come in contact with radiation to chest or face. Only 8.86% had come in contact with radiation.

4.23 Measures Taken when Lump in Breast or any Other Symptoms on Breast

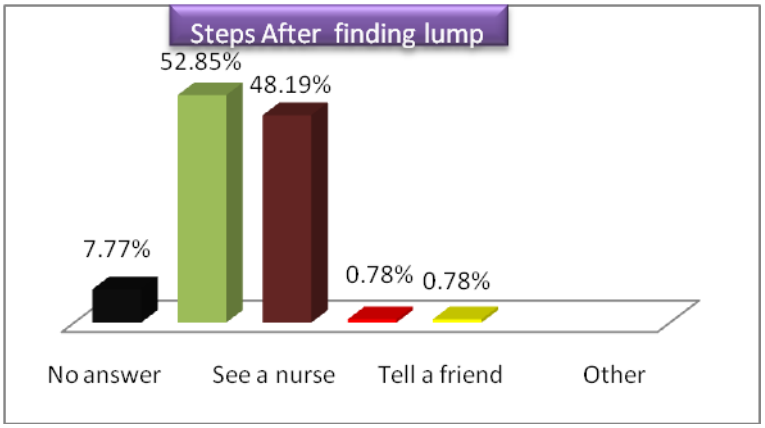

Figure 4.23: *Measures Taken when Lump in Breast or any Other Symptoms on Breast*

Among all the respondents, 62% do not feel any changes in breasts. Only 37.84% feel the changes. Most of the respondents (52.85%) if find a lump or something, they will see a doctor. Rest of the respondents will see the nurse (48.19%), friends (0.78%) tell family member (0.78%) 7.77% gave no answer.

4.24 Emotional Barrier of the respondents

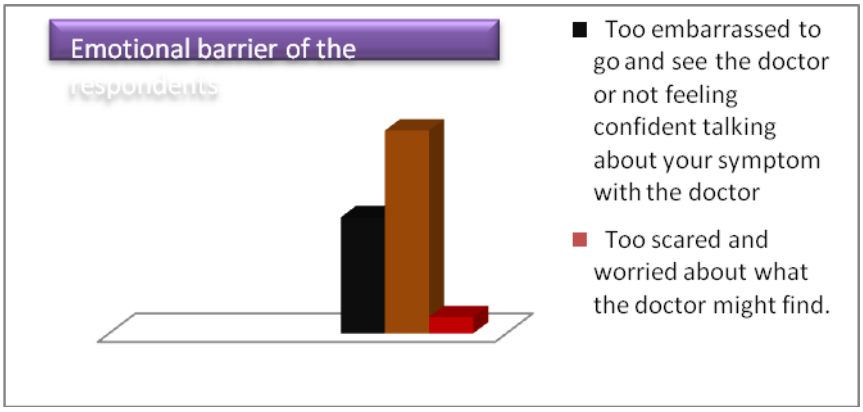

Figure 4.24: Emotional Barrier

When lump in breast or any other symptoms of breast cancer appears, most of the respondents (53.43%) were scared and worried about what the doctor might find. A few of them (30.57%) felt embarrass to go and see the doctor or not feeling confident talking about their symptoms with the doctor.

4.25 Knowledge about the Treatment of Breast Cancer

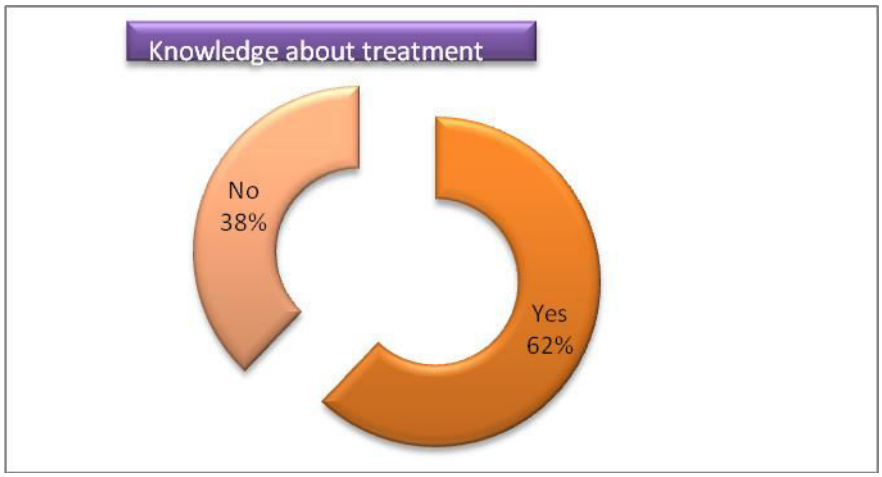

Figure 4.25: *Knowledge about the Treatment of Breast Cancer*

Among all (73.14%) the respondents, 62% had knowledge about the treatment of breast cancer. 38% had no knowledge about the treatment.

4.26: Knowledge about the types of treatment

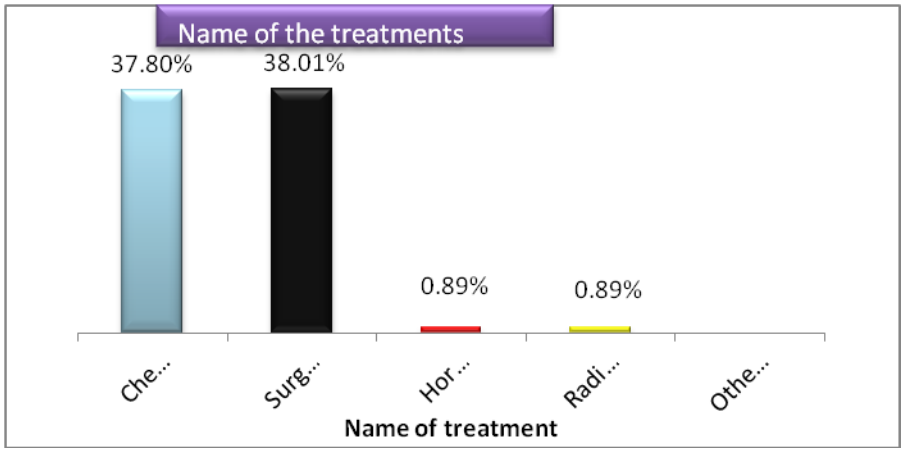

Figure 4.26: Knowledge about the types of treatment

Concerning treatment options for the disease most of the respondents (38.01%) identified surgery; rest of them (37.80%) identified chemotherapy, (0.89%) hormone medical therapy and 0.89% radiation among the 62% respondents.

4.27 Knowledge about the Importance of Breast Cancer Screening

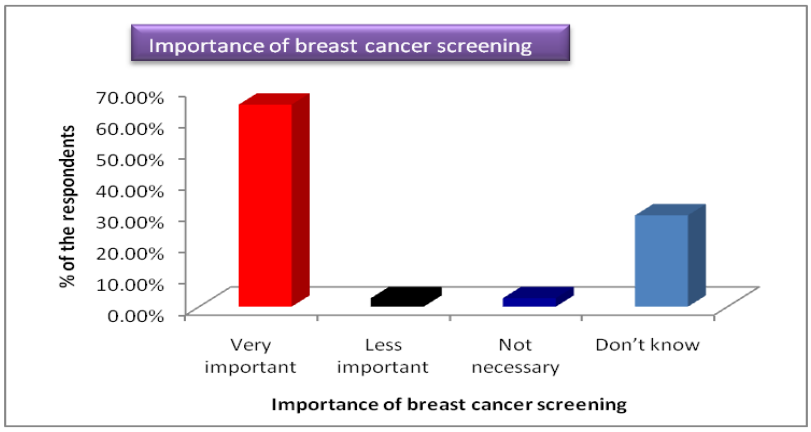

Figure 4.27: Thinking about the Importance of Breast Cancer Screening

Breast cancer screening is a very important measure to minimize the risk of breast cancer. Most of the respondents (64.84%) had agreed with this phenomenon. A very few respondents (2.74%) had not felt that it is not at all necessary. A significant number of respondents (29.30%) did not know whether it was necessary or not.

4.28 Knowledge about the Diagnosis

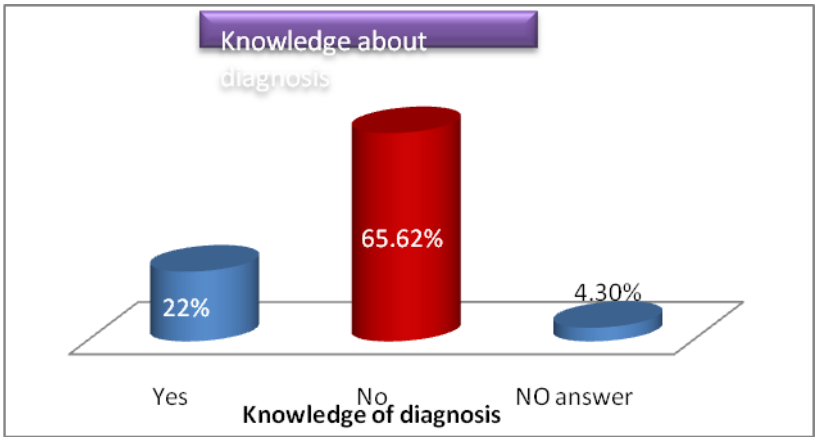

Figure 4.28: Knowledge about the Diagnosis

It had been found that more than half of the respondents (65.62%) had knowledge about the options for diagnosis of breast cancer and 22% did not have any knowledge. Very few (4.30%) did not answer this question.

4.29 Knowledge about the Type of Diagnosis

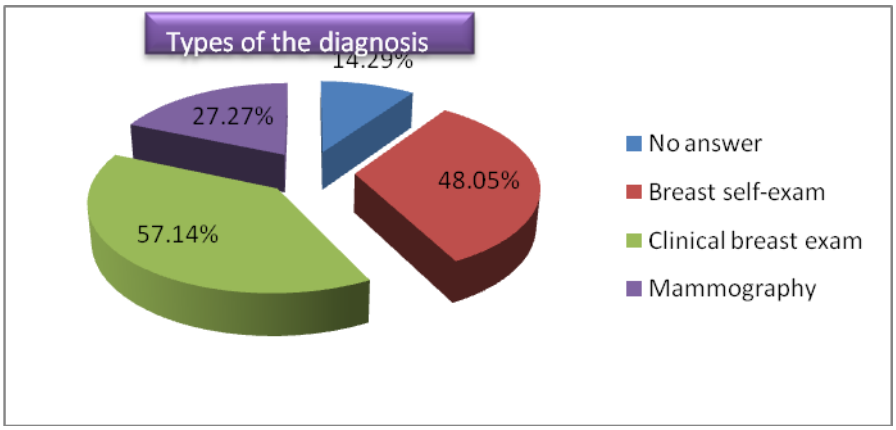

Figure 4.29: Knowledge about the Type of Diagnosis

Among of the respondents (22%) who had knowledge about diagnosis of breast cancer, 57.14% knew about clinical breast exam are the most important type of diagnosis and 48% about breast self-exam. About 27.27% knew mammography for the diagnosis of breast cancer where 10% gave no answer.

4.30 Knowledge about Performing of Breast Self-exam

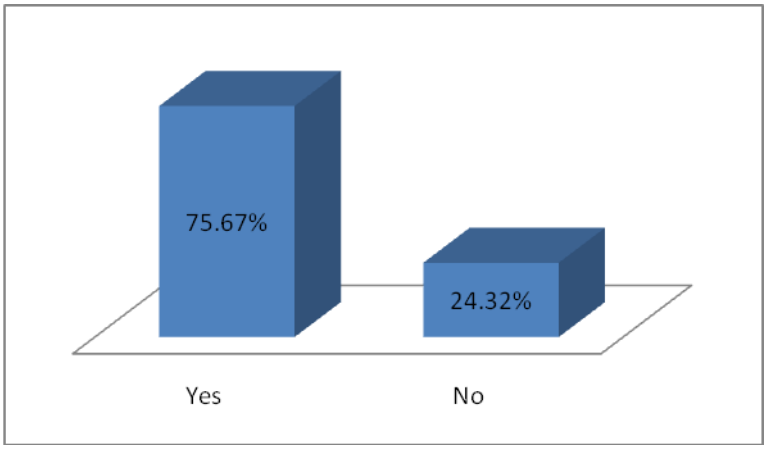

Figure 4.30: *Knowledge about Performing Breast Self-exam*

Breast self-exam helps to minimize the risk of breast cancer. Most of the respondent (75.67%) among the (48%) had knowledge about performing breast self-exam but most of them are wrong. Only a few respondents (24.32%) had no knowledge about this.

4.31 Heard about Mammography

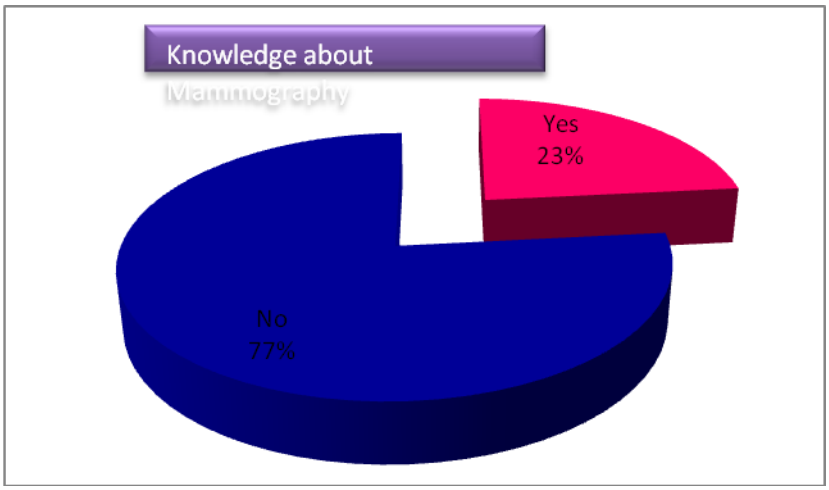

Figure 4.31: Heard about Mammography

Mammography, a low-dose x-ray exam of the breasts to look for changes that are not normal, is a very important measure to minimize the risk of breast cancer. It had been found that most of the respondents (77%) did not know about this; although, very few respondents (23%) were knew this. But the properly do not know when this should start.

Chapter 5

DISCUSSION

5. Discussion

Using a structured questionnaire, this study was conducted on (n=350) rural women from three districts of Bangladesh. The women were selected randomly for the survey. It had been found that 256 respondents (73.14%) heard about breast cancer. Assessment of knowledge and awareness about breast cancer, practice of breast self exam and other healthy habits were done by continuing the study on these respondents only. According to our study, 52.01% of the respondents had come to know about breast cancer from electronic media which is similar to the observation of Moya *et al* where the main source of knowledge about breast cancer was television (72%) among 85% western population. Although they were highly educated (69%) than our respondents most of who were graduates (34.57 %) (Moya et al, 2004).

Among all (350) the respondents, majority (83%) were married and 85.96% of them had children. In most (72.91%) cases the number of children is more than one and almost all the respondents (99.43%) breast fed their children for more than 6 months although only 14.45% knew the role of breast feeding in lowering the risk of breast cancer. Others (only 0.57%) could not breast fed properly due to lack of milk excretion. Having more than one child could also play a role in lowering their breast cancer occurrence risk (Cuzick, J. 2010).

There are several signs and symptoms of breast cancer. Virtually, all of the respondents were known to the sign and symptom of breast cancer. Among those the common responses were a new lump (65.23%), size and shape (53.13%), pain or discomfort (25.78%). Only few people knew about changes in nipples and discharge or fluid from nipple as indicator of breast cancer.

According to our study most of our respondents (29.40%) knew that family history or genetics reason is the main cause of breast cancer. Only 8.29% respondents had family history of breast cancer among who most was their aunty (37%) or sister (25%). A similar result was found in the study conducted by Chantal and Stephen's in which 45% knew that family history was a risk factor for breast cancer (Chantal and Stephen, 2009). Our second majority respondents (28.08%) indicated lack of breast feeding as one of the main risk factors of breast cancer. Although a significant number of respondents (84.76%) had no idea that start of menstruation at less than 12 years age is another risk factor of breast

cancer, majority of them are in lower risk condition as 72% had their first menstruation at 12 years or older age.

According to the respondents, control use of hormone replacement therapy (44.53%) is the best option to lower the risk of breast cancer. Only 38.17% knew the role of nutritious food in lowering the risk but majority of them (48%) takes those often which is a promising sign. Although only 35.13% identified that regular exercise can lower the risk of breast cancer but most of them (32%) often perform exercise without knowing its usefulness. For these practice their BMI status is normal (60.29%) which lowers their risk of breast cancer (Cuzick, J. 2010).

It was found that most of the respondents (62%) had knowledge about the treatment options of breast cancer and they correctly identified surgery (38.01%), chemotherapy (39.58%), hormone medical therapy and radiation. In the study of Moya *et al*, they found that knowledge of treatment was good overall almost 83% (Moya *et al*, 2004).

In our study only 22% respondents knew about the diagnosis options of breast cancer. After 20 breasts self exam is recommended to perform once in every month (Gore, Gregori and Porter, 2014). Though all the respondents were aged 20 years or above, only 48% knew about breast self-exam and 75.67% had knowledge about how to perform it but only 2.70% were correct whereas 53% asian women regularly perform breast self-examination (Sim and Seah, 2009). On the other hand, from the age of 40 years mammography is recommended to perform once in every three years. Among the study subjects 16% were aged 40 years and above but only 5 respondents (6.49%) had known correctly about the age and frequency to perform mammography while 57% asian women aged 40 years and above had gone for a screening mammogram (Sim and Seah, 2009).. None of the respondents had any detailed knowledge about clinical breast exam but 57.14% had heard of it.

Knowledge about breast cancer screening was high (64.84%) in the study population. But only 37.84% respondents feeling breast for changes most of them (53.43%) were scared and worried about what the doctor might find; a few of them (30.57%) felt embarrassed to go and see the doctor or not feeling confident talking about their symptoms with the doctor. 8.86% respondents came in contact of radiation to chest or face. 67.3% of female

health workers in Esanland had never been screened for breast cancer (Uhunmwagho *et al*, 2013).

Chapter 6

CONCLUTION

6. Conclusion

Throughout the world as well as our country, number of breast cancer patient is increasing day by day. Breast cancer in women is a major health burden in Bangladesh. Results of this study showed that all of the women from three districts (Noakhali, Comilla and Gazipur) of Bangladesh heard about breast cancer but they did not have proper knowledge. Respondents were found having a low level of knowledge scores on the sign and symptoms, diagnosis and treatment of breast cancer. Knowledge about importance of screening and practice of it was also very low. But they are less risky position because without knowing they practice some factors such as breast feeding, physical exercise, intake of nutritious food etc. which lower the risk of breast cancer. Nevertheless, policy makers and health professionals are not that much concern about this alarming condition. This study recommends a greater focus on breast cancer education program to improve the knowledge and change misconceptions, as these are the basis for sound attitudes and behaviors of participants towards breast cancer awareness.

Chapter 7

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